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ABSTRACT

This document reviews the history of distance education (DE) in the United States beginning with the early years of correspondence study, radio, and television. It chronicles the rise of DE universities internationally, the impact of the Internet and Web-based education, and the emergence of virtual universities. The paper discusses the emergence of DE theory in the last 30 years and provides a history of its scholarship, including tools such as publications, conferences, professional development, and professional associations. The concluding chapter addresses the question of whether and how DE has changed over the last century, examining the issue in terms of technology, pedagogy, organization, policy, and scholarship. The monograph ends with three reaction papers in which invited scholars provide additional perspectives on the history of distance education: "The Best Place to Start: Moore and 'From Chautauqua to the Virtual University'" (Von Pittman); "Critically Examining Distance Education Practice" (Terry Anderson); and "Redesigning Distance Education to Deal with Equity Problems" (Cheris Kramarae). Contains 103 references. (SK)

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From Chautauqua
to the Virtual University

A Century of Distance Education in the United States

by

Michael Grahame Moore

reaction papers by Von Pittman
Terry Anderson
Cheris Kramarae

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Center on Education and Training for Employment
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The Ohio State University
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Information Series No. 393

by
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The Pennsylvania State University

Reaction Papers by

Von Pittman
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Foreword

The Center on Education and Training for Employment would like to thank the author and reactors for their work in the preparation of this paper.

Michael Grahame Moore is Professor of Education at the Pennsylvania State University (1986-present). He is the founder and editor of the ***American Journal of Distance Education*** (1987-present) and has served for many years on the editorial boards of distance education journals in Great Britain, Canada, India, and Australia. Since his 1972 theory of distance education—generally regarded as the first attempt in English to conceptualize and define this field of study—Moore has advocated and explained distance education in numerous publications and presentations, workshops, and seminars in half the states of the United States and as many foreign countries. Books include ***Contemporary Issues in American Distance Education***; ***Distance Education: A Systems View***, co-authored with Greg Kearsley and translated into Chinese, Korean, and Japanese with a second edition currently in press; and the ***Handbook of Distance Education*** co-edited with William Anderson, which appeared early in 2003. With early training as an economist, he takes a special interest in the construction of macro-systems of distance education at institutional, state, and national levels. Besides a period of full-time employment at the World Bank, he also consults extensively with other international agencies including UNESCO, Commonwealth of Learning, and the International Monetary Fund and with many national governments and public and business organizations. Moore served a 4-year term as Vice-President of the International Council for Distance Education and was a founding member of the Board of the United States Distance Learning Association (USDLA). He was inducted into the USDLA Hall of Fame in 2002.

Von Pittman worked in the continuing education departments of Washington State University and the University of Iowa before moving to the University of Missouri, where he serves as Director of the Center for Distance and Independent Study and is a member of the faculty of the College of Education. His research and publications center on the history of distance education and on the portrayal of adult college students in films and novels. He won the University Continuing Education Association Research and Scholarship Award in 2001.

Terry Anderson is the Canada Research Chair in Distance Education at Athabasca University—Canada's Open University. He is the author of four books and many papers focused on distance education and educational technology, especially studying the role of interaction in learning at a distance. He teaches in the Master's of Distance Education program at Athabasca.

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The following people are acknowledged for their critical review of the manuscript prior to publication: Chere C. Gibson, Professor, University of Wisconsin-Madison; Liz Burge, Professor, University of New Brunswick; David Stein, Associate Professor, the Ohio State University; and Kate M. Carey, Executive Director, Ohio Learning Network. Susan Imel coordinated publication development and Sandra Kerka edited and formatted the manuscript.

Introduction

INTRODUCTION

Although some people think distance education began with the invention of the computer, this is wrong. The origins of some of the most important ideas and the methods we use in distance education today are found in experiments and innovations that have occurred throughout the past century. It is not possible to understand what is happening at the present time unless one knows something of that history. Further, if a century of experience of teaching at a distance using earlier technologies is overlooked, it is very likely that knowledge that is very relevant to our efforts to take advantage of new technology will be overlooked also. It is as a contribution to adjusting the widely lopsided view of the history of distance education in the United States that this monograph has been prepared. It consists of a short account of the practice of distance education, a field that has previously been quite well documented, followed by a less well-recorded aspect of the field, namely the history of its scholarship.[1] Looked at from a historical perspective the question addressed in the third part of the monograph is whether what is often trumpeted as a new era in education—the era of e-learning, distributed learning, blended learning, open learning to repeat a few of the labels currently in vogue—is really so different from what came before. The monograph ends with three short essays in which invited scholars build on the foundation provided in the earlier sections with insights derived from their own studies of this history.

According to a widely cited definition, "distance education is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements" (Moore and Kearsley 1996, p. 2).

Distance education,[2] from its invention in the late 19th century to the present, has been a predominantly adult form of education. Learning by children does not "normally" occur in a different place from teaching. If it can be said that the main occupation of childhood is to receive schooling, the demands of adult life make education subordinate to the more pressing everyday business of making a living and meeting responsibilities to family and society. Under these circumstances, distance education is exquisitely suited to meet the needs of the adult in search of learning, as it delivers the means of organized formal study within the work or home environment.

Distance education is the adult form of education for reasons of psychology and philosophy also. As pointed out nearly 4 decades ago by the adult education psychologist Robert Boyd (1966), what distinguishes the adult learner from the child is the adult's capacity to embrace content for its own sake, independent of the emotional attachment to the parent figure that features so importantly in the life of the child. Popularized by the adult educator Malcolm Knowles, the idea of the adult as one with a self-concept of being self-managing and self-directed is fundamental to understanding the potential (as well as limitations) of "learning that normally occurs in a different place from teaching." Indeed in recognition of both the psychological separation of teacher and learner as well as the physical separation, what is today most commonly described as distance education, was, in the United States at least, for many years known as "Independent Study."

[1] In preparing this paper I received assistance from graduate students Mr. Creso Sa and Ms. Linda Black. Mr. Sa contributed to the history of distance education in American higher education and Ms. Black wrote the first draft of the section on scholarship.

[2] Because distance education aims to provide instruction in places and times that are convenient for learners rather than teachers or teaching institutions, many people use the term "distance learning" as a synonym for distance education. Provided we understand that this is not strictly accurate, because in education, by definition the interest is in learning that is deliberate and planned, and therefore *with teaching as well as learning*, nevertheless when we draw on authors who use the term "distance learning" we will use it also.

If distance education derives much of its perspective on the learner from the theory of adult learning, it also derives a significant element of its philosophical vision from the adult education field. With adult education, distance education from the earliest times has shared three distinctive and often interlocking views of purpose and direction. The first (and simplest to detect and record) is the vocational; the second is the drive for equity of individual opportunity, the third is social change. All three came together in one powerful manifestation in the early 1970s in the form of the Open University in the United Kingdom and the subsequent worldwide embrace of distance education, often under the rubric of "open learning."

It is the intent of the Open University, said its founders, to open opportunity for learning to any adult who wanted it. It set out to help those, particularly of the working class, who had been denied entry to formal higher education, regardless of their geographic location within the United Kingdom, and to do this, in the words of Prime Minister Harold Wilson, by using the "white-hot heat of technology."

It is the reference to technology that brings us to what for so many is both the starting and ending point of their knowledge of distance education. Although the use of "special methods of communication by electronic and other technology" is a defining characteristic of the field, it is unfortunate that the field is too often defined *solely* in terms of the communications technology. This leaves us with a history that describes "correspondence education," "educational television," "teleconferencing," or "e-learning," to name a few examples, as if each is a field of practice independent of others and without generic principles of purpose, organization, method, and history.

Provided we are able to hold the importance of the communications technology in its proper perspective, to describe the history of the distance education field by reference to the principal technology of the day is not only to follow convention, it is almost certainly the simplest way of approaching the task. And it is necessary to recognize that it in spite of the many assertions that our educational decisions are not "technology driven," it is today, as it has been in the past, primarily the emergence of certain technologies that have brought about the changes in educational organization and teaching practice that we recognize as distance education.

The invention of Rural Free Delivery (now the U.S. Postal Service) led to the development of the first programs of education for adults by correspondence instruction at both the university level and by for-profit providers. It was the potential of broadcast television that first caught the imagination of the founders of the Open University, and it is the ubiquity and excitement of the World Wide Web that is driving much of the explosion of interest in distance education at the present time. To survey the history of the field with a structure that features the most common technology of the time is therefore not an unreasonable approach, provided it is not the *only* view taken. As will be seen, more important than the technology is the change in the organization of human and other resources and the change in teaching practice that is a consequence of using that technology—or as is often the case, equally important are the effects of institutions attempting to adopt the technology without making the necessary changes in organizations and in pedagogies.

The Early Years
of Distance Education

The Early Years

Distance education began with the teaching of adult learners by correspondence through the mail, and in this the United States shared with several other industrializing nations, particularly the European. In the United States, the earliest programs had an emphasis on home schooling, liberal education, and vocational training. The Chautauqua Correspondence College was founded in 1881, and in 1883 was authorized by the State of New York as the Chautauqua College of Liberal Arts to offer collegiate instruction by correspondence and to award diplomas and degrees (Bittner and Mallory 1933). Correspondence teaching burst into the university sector in 1892 with the establishment of the Extension Department at the new University of Chicago. There, the first president, William Rainey Harper, inspired by his experience at the Chautauqua Institute and bolstered by the egalitarian vision of the British educator Richard Moulton, initiated the world's first formal program of university distance education. Harper had been a professor at the Baptist Union Theological Seminary in Morgan Park, Illinois, where he developed his skills at teaching by correspondence with a series of courses in Hebrew. As a volunteer at the Chautauqua summer institutes in New York State, he led a movement to extend the educational programs of the institute across the country and around the calendar year. Moulton found a soulmate in Harper, having fled England's University of Cambridge, where the authorities rejected the idea he advocated of establishing a degree program by correspondence.

Together Harper the doer and Moulton the idealist were responsible for organizing the world's first adult, university distance degree program. Addressing the first meeting of the National University Extension Association in Madison, Wisconsin, in 1915, Moulton described three revolutions "which together constitute the transition from medieval to modern." After the Reformation and the era of political revolutions, the third, "by the extension movement instead of a favored few the whole body of the people came to claim their share of culture and the higher education" (Moulton 1915, cited in Carey 1961, p. 26).

The University of Chicago was a private institution; but it was the public land-grant universities that proved the most fertile ground for distance education in the following decades. This is hardly surprising given not only their mandate to open college access to the children of farmers and workers but also their mission to support the state's economic development through teaching and service aimed at the adult farmers and workers themselves (Kerr 1995). Notable among the pioneering institutions were the State University of Iowa (later renamed Iowa State University), the Ohio State University, Pennsylvania State College (later the Pennsylvania State University), and the University of Wisconsin. At Cornell, Martha Van Rensselaer joined the faculty in 1900 to start working on a home economics extension program targeted at rural women in the state of New York. By 1903, there were three credit courses being offered by correspondence and 2 years later, a noncredit correspondence course was available for any woman anywhere in the state. In 5 years, the program enrolled more than 20,000 women. Van Rensselaer would be appointed full professor in 1911, one of the first women, along with her partner Flora Rose, to achieve such a position at Cornell (Cornell University 2001). By 1930 correspondence teaching was offered by 39 American universities (Bittner and Mallory 1933).

Over time an increasing number of for-profit organizations began to offer courses. Dubious sales practices by some of these organizations brought the method into disrepute, and to deal with this, in 1926 the more responsible schools set up a monitoring organization called the National Home Study Council (NHSC). By then, Dorothy Canfield Fisher could write: "There are now about two million students enrolled every year in correspondence schools ... four times the number of all the students enrolled in all the colleges, universities and professional schools in the United States" (cited in Bittner and Mallory 1933, p. 31). In 1994 the National Home Study Council changed its name to the Distance Education and Training Council.

By the end of the 1950s, 60 universities, members of the National University Extension Association (NUEA), had correspondence study departments. Of those 60, 45 reported their statistics for 1958-1959. The numbers taking courses were 98,696 at the college level, 55,461 at the high school level, and 6,631 not for credit. The Correspondence Education Research Project (CERP) supported by both the NHSC and the Correspondence Study Division of the NUEA, reported that approximately 3 million Americans were studying by correspondence (MacKenzie et al. 1968). Of those, more than half were studying in the Armed Services, more than 20% privately, nearly 10% in college programs, and about 9% in other categories.

The invention of the continuing education unit (CEU) as a uniform measure for nondegree continuing education gave a boost to university noncredit correspondence courses. Particularly successful noncredit programs included those designed particularly for specific trades of professional or voluntary groups such as Penn State's automatic sprinkler and philately courses.

In 1968, in an attempt to distinguish themselves from the home study schools, university correspondence educators decided to call their method "independent study." They became the Independent Study Division of the NUEA, later the National University Continuing Education Association (NUCEA).

Founded in 1941, the United States Army Institute was transformed in 1943 into the United States Armed Forces Institute (USAFI), located in Madison, Wisconsin, and headed by William Young, director of correspondence education at the Pennsylvania State University. USAFI provided correspondence courses to military personnel worldwide throughout World War II and on into the post-war years until its closure in 1974. By 1966 there were over 200 courses in elementary, high school, college, technical, and vocational subjects, catering for some half million students (Brothers 1971). More than 7 million members of the Armed Services took high school courses and approximately 261,222 enrolled in college courses before USAFI closed (Watkins 1991, p. 30). USAFI pioneered computerized distribution and marking of assignments, a 24-hour phone-in counseling service for students, and the use of group study classes linked to the correspondence curriculum. These and other ideas were to be taken up by an ex-Naval officer at the University of Wisconsin, Charles Wedemeyer, director of correspondence instruction, who had taken much interest in the method as a means of training naval personnel during his wartime service and continued as a result of his association with USAFI.

In 1974 the U.S. Department of Defense replaced USAFI with DANTES (Defense Activity for Non-Traditional education Support), a program of correspondence education that in effect outsourced the delivery of courses to the universities and private schools. In this, DANTES cooperated with the Independent Study Division (ISD) of NUCEA in promoting and delivering independent study programs and courses (Wright 1991, p. 54).

Radio and Television

Experimenting with "new technology" began with the spread of radio broadcasting during the 1910s and 1920s. However, these attempts to deliver programs through radio failed, in part due to lack of investment but primarily to the failure of university faculties to recognize the opportunity, losing control of the airwaves to commercial interests (Pittman 1986).

In 1934, one of the pioneering land-grant institutions, the State University of Iowa, became the first university to broadcast educational television programs. Five years later, the university's station had transmitted about 400 programs (University of Iowa 2002). After World War II, when television frequencies were allocated, 242 of the 2,053 channels were given to noncommercial use. In addition to programs broadcast on these channels, educational television was also pioneered by commercial stations. NBC aired Johns Hopkins University's "Conti-

nental Classroom," and CBS broadcast "Sunrise Semester." In the following years, television broadcasting would rouse much more enthusiasm and achieve greater success than radio, largely as a result of the funding provided from the 1950s onwards by the Ford Foundation (Jeffries 1995). When the foundation turned its attention to public broadcasting in the 1960s, it was the development of the federal Educational Television Facilities Act that supported the construction of educational stations. In 1965 the Carnegie Commission on Educational Television issued a report that led to the passage of the Public Broadcasting Act of 1967, setting up the Corporation for Public Broadcasting (CPB). In 1961 the Midwest Program on Airborne Television Instruction involved six states in designing and producing programs that were broadcast from transmitters transported on DC-6 airplanes. According to Unwin and McAleese (1988), this project, which lasted 6 years, helped break down state barriers and paved the way for future interstate educational broadcasting by satellite.

Wedemeyer and the Opening of the Modern Era

In 1964, Charles Wedemeyer obtained a grant from the Carnegie Foundation to fund his Articulated Instructional Media (AIM) Project at the University of Wisconsin. This development set the ground for a major leap in the theory and practice of distance education, indeed of education itself. Wedemeyer's key insight was the proposition that it should be possible to apply the principles on which the modern manufacturing industry was founded to the teaching of adult learners at a distance. By deconstructing the teaching process into its component processes, forming teams of specialists in each process, and using a variety of technologies, linked—i.e., "articulated"—together, it would be possible to deliver courses of higher quality and lower cost at a distance than was ever achievable by traditional craft methods, i.e., a single teacher in a classroom.

In the AIM project, concepts were tested that laid the foundations for the open university movement and thus the modern era of distance education. Besides the extraordinary challenge to the traditional concept of the very meaning of being a teacher, perhaps most important was the insistence on using a costly range of media, not only correspondence materials, but radio and television programs, audiotapes, telephone conferencing, and local support in the form of library resources, tutoring, and study groups. Using a variety of media meant that not only could content be better presented than by any one medium alone, but also persons of differing learning styles could choose the particular combination that was most suited to their needs. AIM invented the idea of the course design team, formed of instructional designers, technology specialists, and content experts. Separate from the designers, tutors and learner support personnel assisted learners by interacting through the telephone, mail, and at local tutorial sites (Wedemeyer and Najem 1969).

Despite, or perhaps because of, the audacity of the AIM project, the center of action in the evolution of distance education was not to be in Wisconsin or even in the United States. The Wisconsin experiment faded as funding from the Carnegie Foundation ended and university internal politics put a brake on the threat to established practices (Gooch 1998). Wedemeyer was later to pass on the principal lessons learned there, not only about design and teaching techniques, but more important about policy and organizational structures. Specifically, he recommended that distance education institutions of the future should take care to protect themselves from what he saw as the three fatal flaws in the Wisconsin project: lack of autonomy over its funds, its faculty, and its academic rewards (Wedemeyer 1981).

The Rise
of Distance Education Universities

Rise of Distance Education Universities

In the United Kingdom, a commission was formed in the late 1960s to identify ways of expanding the higher education system, especially by opening admission to working class adults (Cerych and Sabatier 1986). The interaction of leading members of the commission with Charles Wedemeyer had a determining impact on the formulation of the concept of the institution that was initially called the "University of the Air" and became known as the Open University.

Hired as a consultant, Wedemeyer insisted to the British that the AIM project demonstrated the difficulties in trying to meet the needs of a large population of adult part-time students within the structures and bound by the traditions of the conventional university. In 1969, resisting the claims from the traditional universities for funds to run their own distance education programs, the British government committed to setting up an independent, large-scale system dedicated entirely to distance education, using the full range of technologies and having its own faculty, funds, and degree-giving authority.

The Open University (OU) has been described as one of the most successful cases of policy implementation ever attempted in the educational field. This success is seen not only in the extent to which it has fulfilled the expectations of its creators as an agency for reform in its native Great Britain, but also its impact worldwide, including the United States. Domestically and internationally, with an annual enrollment of more than 100,000 adult students and around 20,000 baccalaureate graduates each year, the OU demonstrates not only the potential of distance education to provide opportunity regardless of geographic location, but even with an open "first-come, first-served" enrollment policy, it demonstrates that distance is no barrier to the delivery of education that is of very high quality. In official government evaluations the OU is ranked near the top of UK universities in both research and teaching, and it achieves these results with a superior cost-effectiveness, with the education of a full-time equivalent student costing 40 percent of the average cost in the traditional universities. It enrolls more than one-third of all part-time students in Great Britain and graduates about 1 in 12 of all university graduates. And this is *all* adult education (see http://www.open.ac.uk).

In part due to those achievements, the OU has been widely emulated in other countries. Because of the large scale that is needed to obtain both high quality and cost-effectiveness, many of these open universities are large, or so-called, "mega-universities" (Table 1), distance teaching institutions having more than 100,000 students (Daniel 1996).

Distance education universities were established elsewhere in addition to the mega-universities listed in Table 1. They include the Universidad Oberta de Catalanya based in Barcelona, the Al Quds Open University in Jordan (later Jerusalem), the Andra Pradesh Open University in India, Athabasca University in Canada, the Open Universiteit Heerlen in the Netherlands, the FernUniversität in Germany, the National Open University in Taiwan, the Open Polytechnic of New Zealand, the Open University of Israel, the Universidad Estatal a Distancia in Costa Rica, the Universidad Nacional Abierta in Venezuela, the Universidade Aberta in Portugal, and the University of the Air in Japan. Although there are differences, they share important similarities: they are single-purpose (often called "single-mode") distance teaching institutions, dedicated solely to this approach to teaching and learning; and they are generally national in scope, employing teams of experts to design courses, having flexible admission policies, and enjoying economies of scale through large enrollments.

Among the few countries that did not set up a national open university, the most notable is the United States, the nation that through Wedemeyer gave birth to almost all the main methodological practices on which the success of the OUs depend. Numerous explanations for this have been given, among the most defensible being the fragmentation of control of higher education, with each state jealously defending its own local higher education establishments. Where open universities were successfully

Table 1. The Mega-Universities

Country	*Name of Institution*	*Established*	*Enrollment*
China	China TV University System	1979	530,000
France	Centre National d'Enseignement à Distance	1939	184,614
India	Indira Gandhi National Open University	1985	242,000
Indonesia	Universitas Terbuka	1984	353,000
Iran	Payame Noor University	1987	117,000
Korea	Korean National Open University	1982	210,578
South Africa	University of South Africa	1973	130,000
Spain	Universidad Nacional de Educación a Distancia	1972	110,000
Thailand	Sukhothai Thammathirat Open University	1978	216,800
Turkey	Anadolu University	1982	577,804
UK	The Open University	1969	157,450

(adapted from Daniel 1996)

established, because of their large scale and consequently large total costs (even though average costs are low), the scale of provision was nearly always national, and that required national political commitment and leadership, particularly in facing up to the higher education lobbies. In United States this kind of political leadership has been lacking.

Some institutions were set up in the United States in the late 60s and 70s that, though much smaller, showed some of the characteristics of the open universities. Among the first of these was Nova University of Advanced Technology, a nonprofit institution inaugurated in 1964. It offered degree programs both in the classroom and at a distance, through regional centers in the state of Florida. Ten years later, it changed its name to Nova University and in 1994, it merged with the Southeastern University of the Health Sciences to become Nova Southeastern University (Nova Southeastern University 2003).

In 1971, the Empire State College was created within the State University of New York to deliver bachelor's and associate degree programs exclusively at a distance with an enrollment that reaches 6,000 per year. Special adult degree programs were started by Goddard College and Syracuse University, and external degree programs were started by Regents College in 1970 and by Thomas Edison College of New Jersey in 1972. By the end of the 1980s, three U.S. universities—Rutgers, the University of Houston, and the University of Maryland—were making use of OU-UK courses (Verduin and Clark 1991, p. 18).

Also influenced by the example of the UK OU was one of the first efforts at consortial organization for delivery of distance education: the University of Mid-America, which attempted to apply several of the OU's innovations, particularly the course development team method. Though it served over 20,000 students, it lasted only 8 years, 1974-1982, its demise being attributed to poor planning and interorganizational politics (ibid., pp. 18-19).

Experimentation with cable television included the Pennsylvania State University's Pennarama Network, the for-profit Mind Extension University, the University of Missouri CALs system, the Electronic University Network, and the International University Consortium based at the University of Maryland (Wright 1991, pp. 55-63).

The OU's emphasis on learner support in its regional tutorial and counseling services also led to an increased attention to this by U.S. institutions and to an increased sophistication in student service units, with best practice exemplified by Brigham Young, Indiana, Iowa, Michigan, Nebraska, Penn State, Texas Tech, and Wisconsin (ibid.). The 1980s also saw improvement in the quality of course study guides resulting not only from the OU's example but also helped by the introduction of computerized desktop publishing systems.

By contrast with the open universities around the world that are single-mode universities, in the United States most higher distance education was embedded within dual-mode institutions that offer both distance and face-to-face programs. Typically, these dual-mode institutions set up a unit or division to specialize in the management and operations of the distance teaching activities. Though they received most attention in academic journals, these university programs were (and remain) only the tip of the distance education iceberg, for the majority of students were not in higher education. By 1984 there were approximately 400 "single-mode," private home study schools offering courses in about 600 areas of study, primarily continuing education courses aimed at the supporting trades to the professions and vocational subjects, with electronics, business, and computing the most popular subjects (Zigerell 1984).

At the end of the 1980s, 90% of the distance education in the United States occurred in postsecondary institutions other than collegiate settings. Although colleges and universities in the National University Continuing Education Association accounted for 300,000 students, schools associated with the National Home Study Council enrolled 4 million students, with the Armed Services providing 700,000 (Feasley et al. 1989; Ludlow 1987).

Although the United States was left behind in the 1970s in not setting up new organizational structures along open university lines, what developed more significantly in this country compared to others was the application of DBS, direct broadcast by satellite, and other forms of teleconferencing, making possible group-oriented distance teaching by conventional universities, either alone or in consortia. One of the models here was the National Technological University (NTU) headquartered in Colorado Springs with uplinks from some 50 leading universities, offering both degree programs and continuing education for engineers and scientists. Downlinks were located in some 500 locations, including the participating uplink universities, other universities, private sector companies, and government agencies. Interaction in such systems is nearly always by audio, i.e., telephone. Corporations cooperating in NTU (http://www.ntu.edu) included Boeing, Kodak, General Electric, IBM, Motorola, and Xerox (Mays and Lumsden 1988).

Another important vehicle for collaboration in videoconferencing that developed in the 1980s was the National University Teleconference Network (NUTN). Beginning with 67 college members and 10 programs in 1982, the network grew to more than 250 organizations either providing or receiving a range of over 100 programs in such areas as aging, agriculture, AIDS, child abuse, tax planning, reading instruction, engineering, interpersonal relationships, international affairs, marketing, medicine, and social and political affairs. NUTN provided programs to as many as 6,000 people at a time, located at some 200 receiving sites (Oberle 1990).

Compared with other models of distance education delivery, the satellite television programs were generally designed for group use, i.e., they fitted in well with a view of education as something that occurs in "classes," unlike the correspondence or the open university models, which were directed at individuals learning alone, usually in "home study." With the further development of cable television, a number of other television universities evolved that were directed more at the individual than the class, notably Mind Extension University and the programs distributed by PBS, especially those produced by the Annenberg/CPB Project. By the mid-1980s there were around 200 college-level

"telecourses" produced by universities, community colleges, private producers, and public and commercial broadcasting stations and distributed either by the producers or by PBS's Adult Learning Service (Brock 1990).

More than 1,000 institutions of postsecondary education signed on each year for courses distributed by the Adult Learning Service, enrolling more than 600,000 adult students. Starting in 1981, the Annenberg/CPB Project provided funds typically in the $2-3 million range for university-level courses, generally based on television programs. The courses were fully integrated instructional programs that included not only television programs, but textbooks, study guides, and faculty and administrator guides. These telecourses were marketed to colleges and universities throughout the country and used as part of their regular course offerings or to supplement course offerings as well as by university correspondence programs. Instruction, either face to face or by correspondence, and accreditation were provided by each university or college. Annenberg/CPB and many other telecourses were designed by teams of academics drawn on an ad-hoc project basis from universities and colleges nationwide, together with television and other media producers, instructional designers, and adult educators. As a result, an increasing number of academics became introduced to team design procedures and administrators become sensitized to the idea of using instructional materials from outside their own institution. Educational institutions using telecourses frequently feed into the local cable system as in Pennsylvania where the statewide cable system called Pennarama reached around 80,000 homes (Stern 1987).

A related technology was Instructional Television Fixed Service, or ITFS. ITFS was a low-cost, low-power, over-the-air technology that delivered up to four channels of television pictures in any geographic area but only to a radius of about 25 miles. Schools and other educational institutions could receive it using a special antenna costing about $500. Public school districts used ITFS for sharing specialist teachers and providing teacher continuing education and certification courses. From 1984, California State University-Chico used ITFS to deliver computer science courses to Hewlett Packard employees, with $1 million from that corporation, to all their locations in five states.

In corporate continuing education, videoconferencing became a huge business. By 1987, a study of Fortune 500 companies showed half using this delivery system. IBM had its Interactive Satellite Education Network (ISEN) with originating studios in 4 cities and receiving sites in 13; Federal Express had daily programs to 800 downlinks nationwide; Kodak Corporation sent twice weekly, 2-hour training programs nationwide; Tandem Computers broadcast to 11 European countries as well as to 72 sites in North America; and Domino's Pizza sent a mobile uplink to any store in the country where an employee had something to teach the rest. For organizations not having their own satellite networks, there were numerous business satellite networks. An example was AREN, the American Rehabilitation Educational Network, providing professional continuing education for health care professionals at nearly 100 sites nationwide. One of AREN's programs, Management Vision, was broadcast to 240 sites in 1986-87 and to 650 in 1987-88. Corporations made up 60% of subscribers, hospitals 30%, and colleges most of the remaining 10% (Irwin 1992).

The Public Service Satellite Consortium was a collaborative group representing a broad spectrum of telecommunications users such as the American Hospital Association, the American Law Institute, American Bar Association Committee on Continuing Professional Education, the National Education Association, the AFL-CIO, and the U.S. Chamber of Commerce, all of which used satellites on a regular basis in their continuing education programs. The Health Education Network was a subscription-driven network with over 300 hospital members, focusing on inservice training of medical personnel and patient education with approximately 40 programs monthly.

At the state level, the National Governors Association report noted that "distance learning initiatives and expansions were reported by 37 states" (p. 23). Ten states reported they were operating a statewide or regional distance education network, and 14 were planning one (National Governors Association 1988). At the federal level, distance education was stimulated, particularly in the schools, by the so-called Star Schools Project. Initially, four regional partnerships received $19 million per year for 2 years for the promotion of teleconferencing: the Midlands Consortium, five universities in four states; the Texas-based TI-IN network (three state agencies, four universities, and a private corporation); Satellite Educational Resources Consortium, a group of state education agencies and state television authorities to provide high school courses in 19 states; and Technical Education Research Centers Inc. to provide programs via computer network. The most important point about the Star Schools was the effect of stimulating collaboration among provider agencies located in different states to deliver across state boundaries (U.S. Congress 1989).

In audioconferencing, the University of Wisconsin had the world's most advanced system. It consisted of a private telephone network with 200 sites in university campuses, county courthouses, libraries, hospitals, and schools with over 35,000 users in a wide range of credit and noncredit courses (Feasley 1983). In January 1986, the Penn State adult education program initiated a graduate program delivered by two-way compressed video, known as the T1 system, together with audioconferencing using a Darome microphone/speaker system (Moore et al. 1995).

One of the first examples of distance education by computer conferencing was the Electronic University Network, in which an undergraduate degree could be earned independently by taking courses designed at 19 universities with accreditation awarded by Thomas Edison College in New Jersey. Courses were delivered on computer disk and in print, with interaction with instructors by computer, telephone, and mail. A similar program was developed by New York Institute of Technology (Bear 1988).

Attempts to use technology to link U.S. universities with those in other countries included the Global University Consortium (GUC) and the University of the World. The GUC focused on university departments around the Pacific through multipoint-to-multipoint interactive teleconferencing. Active sites in a 1988 demonstration titled Distance Learning around the Pacific Basin included three in the United States and one each in Australia, Canada, Japan, and Korea. The University of the World set out to put into operation an international electronic university employing computer, telecommunications, and television technology, which would disseminate courseware, research data, scientific documents, and other materials over a network connecting educational and research institutions globally. Colleges and universities were invited to join this international electronic network founded on two electronic mail systems: BITNET in North America and EARN in Europe. In September 1988, 50 people from 11 countries formed the Foundation for International Tele-education. They included the Educational Broadcast Service Trust of the UK, the TeleUniversité of Montreal, Televisa of Mexico, NUTN, Global Pacific Electronic University, and the Public Service Satellite Consortium (Utsumi, Rossman, and Rosen 1990).

The experience of the 1980s points to one significant key to understanding distance education practice in the United States, which is to recognize the collaborative, voluntary partnerships between organizations representing different media, clienteles, and public and private institutions. As a result of these collaborations, many evolving systems have many of the features of the more formally established distance education systems around the world.

The Internet
and Web-Based Education

The Internet

Despite the common perception of computer-based distance education as a 1990s phenomenon, its origins date to advancements in computing and networking more than 3 decades ago. In the 1970s, for example, the PLATO project at the University of Illinois, although more an example of computer-assisted instruction than of online teaching, allowed a number of sites to communicate via dial-up and dedicated connections, giving credence to the idea of an electronic network form of instruction. The PLATO system indeed originated a number of well-known commercial products such as Lotus Notes (Inglis, Ling, and Joosten 1999).

If computing was the first of the technologies making the Internet possible, the other was the development of networking technologies. In 1969, the U.S. Department of Defense's Advanced Research Projects Agency (ARPA) set up a network to link military, university, and defense contractors. For many years, ARPANet was used to exchange e-mail and data files and to access bulletin boards and library facilities. This early system could already transport text, images, and even computer software (ibid.).

In the mid-80s the National Science Foundation (NSF) developed NSFNet, a network of five supercomputer centers connected to universities and research organizations. NSFNet was upgraded in 1987 and 1992. As early as 1986, the Pennsylvania State University began offering distance education in its Adult Education Program through computer-based communications supplemented with audioconferencing, at first to students at different locations in the state and beginning in 1989 to students in Mexico, Finland, and Estonia.

Conceptualized by Tim Berners-Lee, a researcher at the European Laboratory for Particle Physics, the World Wide Web is a set of standards that enable a document to be accessed by different computers, running different software, operational systems, and different screen resolutions and separated by any distance. The first Web browser, Mosaic, came out in February 1993, and it was this software with its graphical interface that freed educators from a purely textual medium of communication and gave them the means to conceive of new ways of opening access to learning programs via the World Wide Web.

Adoption of Web communications increased faster than access to any previous information and communication technology (Bates 2000). In 1995, only 9 percent of American adults accessed the Internet, totaling 17.5 million users. By 2002, 66 percent of American adults were going online, a total of 137 million users. Most people access the Web from home and secondarily from the workplace. On average, they spent 8 hours per week online (Greenspan 2002).

In the 1990s, a number of universities started running Web-based distance education programs, many setting up a separate management unit to be responsible for online education. Early examples of providers of entire degree programs being offered through the Web include the Online Campus of the New York Institute of Technology, Connect Ed in partnership with the New School for Social Research in New York, and the International School of Information Management. Penn State University offered the first graduate degree in adult education online through its World Campus. By the end of the decade, 84.1% of public universities and 83.3% of 4-year public colleges offered Web-based courses. Seventy-four percent of the community colleges also offered online courses. The rates were lower for private universities and private 4-year colleges, 53.8 and 35.5 percent respectively (Green 2001).

Just as each previous generation of technology—correspondence, broadcast radio and television, and "narrowcast" video- and audioconferencing—produced its particular form of distance learning organization, the spread of contemporary Internet technology stimulated new ways of organizing distance teaching. This has been the case in established single-mode open universities and correspondence schools. Changes have been more significant perhaps in dual-mode institutions and those institutions that never before considered

distance education but are now converting to dual-mode status. New technology has also led to the emergence of new forms of single-mode, purely electronic universities, and to new combinations and collaborations among institutions of all types.

New providers began to enter the market, selling educational services online, especially to adult learners in the labor force. For-profit universities were set up in the e-commerce boom of the late 1990s, raising money in stock offerings tied to their distance education programs. Some traditional education institutions have responded to such competition by establishing their own for-profit affiliates, whereas corporations established their own in-house systems to meet their own needs for "just-in-time" and "just-enough" education.

In the new century, high-speed networks are rapidly emerging. Of particular importance for education applications is Internet 2—in September 2001 a consortium of more than 180 U.S. universities; 78 corporate partners, sponsors, and members; some 50 affiliates; 10 U.S. government agencies; and over 30 organizations outside the United States that have projects similar to Internet 2 in scope and objectives. Internet 2 is organized as a nongovernmental educational organization (http://www.internet2.edu) to develop uses for high-speed networks and to build better network technologies. This new super-fast data pipeline will link the institutions at speeds 45,000 times faster than the best telephone modems previously in use.

In this new generation of distance education there is another factor at work, perhaps even more significant than the technology: reinvention by a growing number of scholars of the basic concept of distance education. More and more people realize that education is more than a single process that can occur only in a single geographic location. University-level adult education is being recognized as a more open system. A typical (but for a conventional academic, insightful) statement in a 1995 article explained that the traditional model—"centrally stored information, scholars coming to the information, and a wide range of information subjects under one institutional roof—was logical when information was scarce, reproduction expensive and restricted, and specialization low" (Noam 1995, p. 247). This model is no longer valid when information is dispersed, scholars can access it wherever they are located, and reproduction is virtually free (ibid.).

Before Noam, Moore (1993) could write as a distance educator:

> The Virtual University is now technically viable. Such an organization could make instructors anywhere available to students anywhere, and could make courses prepared by any institution available to students anywhere. A student's faculty need no longer be limited to those who assemble in any one place any more than a teacher's students would have to assemble in one place. Students could learn wherever they are located from instructional resources wherever they are located. No student would need to take instruction from exactly the same teacher as any other; students could have access to teachers from any state or country at any time and in any combination; they could have access to information resources from any state or country at any time and in any combination. Students also could have universal access to advice and guidance. (p. 4)

Emergence of Virtual Universities

Taking the new technology in stride, universities with an established tradition in distance education set up education programs or units to design and deliver courses on the Web. At the dual-mode institutions, the courses delivered on the Internet proved very similar in content and teaching method to what was taught by the same teachers in their conventional classrooms (Harasim et al. 1997). Most classroom teachers find this way of teaching to be a challenge;

however, compared to the magnitude of change in the distribution of resources and the roles of teachers that characterize the single-mode institution, this approach does not require too much change in resource allocations or the role of the teacher, and so has proven widely popular for those reasons. The dual-mode institution might provide certain specialized learner support services including library access, registration and records, and advising. In established dual-mode institutions, these are usually extensions of the services previously provided to correspondence students.

Some traditional universities attempted to develop independent for-profit online enterprises. Temple University established Virtual Temple; New York University created NYU Online; the University of Maryland University College set up its for-profit unit. Cornell University had to redesign its eCornell initiative into a nondegree, continuing education effort (Hafner 2002). However some of the most talked-about Web-based distance education enterprises of the past few years quickly passed away. California Virtual University, set up as an alternative to joining Western Governors University, was abandoned in 1999 (Blumenstyk 1999). Fathom, an ambitious consortium of mega-stars in education and the arts,[3] closed in 2003.

Among more sustained exemplars of virtual universities are Jones International University, Western Governors University, University of Phoenix Online, and Capella University. (See Table 2.)

Important in the public sector provision of Web-based distance education is the eArmyU effort, a project that makes it possible for soldiers to enroll in courses from 24 different higher education institutions. Students are guaranteed transferability of credit among schools and given credit for prior learning and military experience. The other military services have worked toward similar partnerships in an effort to upgrade training/educational opportunities for their personnel.

New companies were established at the end of the 1990s for the purpose of selling online training services. Examples are Digital Think, Element K, eMind, Netg, and SmartForce. Other companies provide online learning tools and environments for colleges and universities and/or help them go online (e.g., Blackboard.com, WebCT, eCollege). SmartForce, with 2000 sales of $168 million, claimed to be the world's largest e-learning company, serving over 2,500 corporate customers and having over 30,000 e-learning objects in its library.

A related phenomenon in the 1990s was the emergence of companies that specialized in testing. Three companies played the major role in this sector: Prometric (acquired from Sylvan Learning Systems by Thomson Corporation of Canada for $775 million), CatGlobal (a division of Houghton-Mifflin), and Virtual University Enterprises (VUE, a division of NCS Pearson). Prometric operates about 2,500 testing centers in 140 countries. VUE has nearly 1,500 locations. CatGlobal offers wholly online computer-based testing from servers in 16 countries. Some training companies have developed their own certification. Learning Tree International, for example, certifies Cisco Routers and Oracle7 Database Administrators on completion of course work and passing allied examinations (http://learningtree.com).

With the plethora of online courses being created and marketed by a wide variety of public and private institutions, the sheer volume of learning opportunities led to the need for a means of helping potential students to find their way through the maze of possibilities. The technological response has been the development of Web portals, online enablers, marketing channels, and other information organizing schemes. Examples are Hungry Minds, Learn2.com, and SmartPlanet.com.

[3] This consortium included the American Film Institute, the British Library, the British Museum, Cambridge University Press, the London School of Economics, the Natural History Museum, the New York Public Library, the Science Museum, the University of Chicago, the University of Michigan, the Victoria & Albert Museum, and the Woods Hole Oceanographic Institution (http://www.fathom.com/).

Table 2. Examples of Virtual Universities

	Jones International University
Founded	1987 by Glenn Jones (as Mind Extension University); Web based in 1995
Mission	Caters for an adult audience, mainly working professionals typically between the ages of 35 and 52
Offerings	Courses have a professional development character. There are undergraduate, master's, and certificate programs in the fields of business, education, communications, and information technology. About half of its students have tuition paid by their employers, and most are enrolled in nondegree or certificate programs (Stern 1999).
Accreditation	North Central Association of Colleges and Schools 1999 [a decision that rendered the university more credibility and was contested by some in the academic community (McCollum 1999; Perley and Tanguay 1999; Stern 1999) and defended by the Association (Crow 1999)]
	Western Governors University
Founded	Formed following a 1995 meeting of the Association of Western Governors
Mission	A joint project of 19 states and Guam (Krieger 2001), a nonprofit, privately controlled institution designed to offer courses from a network of existing institutions. WGU claims to be a competency-based institution. Under this system, students earn credits through demonstrated competence on skills or knowledge, which are intrinsically related to professions.
Offerings	Programs are in the fields of business, information technology, and education. WGU does not design courses itself. Rather, it is an administrative body, which endorses, presents to the public, and coordinates the provision of distance education courses from participating traditional universities. However, it does provide its own degree programs and certification.
Enrollment	2,500 in 2002
Accreditation	Accrediting Commission of the Distance Education and Training Council 2001
	University of Phoenix Online
Founded	1976 by CEO John G. Sperling
Mission	Dual-mode institution: it delivers courses both in classrooms (through 55 campuses and 98 learning centers in 18 states) and through distance.
Offerings	The focus of Phoenix also lies on working adults, and its courses have a vocational orientation. Most of Phoenix Online's faculty is part time (90 percent). Its full-time faculty designs the courses, and instructors are supposed to facilitate the online lessons. There is an emphasis on standardizing courses, and instructors work in a highly structured environment. The university claims that it prefers "practitioner faculty," who have full-time employment in the discipline they teach. Methods emphasize teamwork, problem-solving activities, and practical application of knowledge (Krieger 2001).
Enrollment	Increased from 48,000 to 68,000 between 1999 and 2000; online: 18,500 students (Krieger 2001)
Accreditation	North Central Association of Schools and Colleges 1978
	Capella University
Founded	1993 by CEO Steve Shank
Mission	Private, for-profit Web-based university aiming at an adult professional audience. Its mission is to deliver high-quality programs that provide traditional and contemporary knowledge through flexible and innovative forms of distance learning. Capella University explicitly recognizes adult learners as active partners in the design and implementation of their academic experience (see http://www.capellauniversity.edu/aspscripts/about/mission.asp).
Offerings	Degree programs in business, education, psychology, human services and technology, at the bachelor's, certificate, master's, and doctoral levels (Krieger 2001)
Enrollment	3,000
Accreditation	North Central Association of Colleges and Schools 2000

Theory and Scholarship in Distance Education

Distance education, from its inception operating at the margins of what university professors and others considered to be respectable, usually struggling to find enough resources to keep going and always having to justify its existence, found few academics with enough time and commitment for scholarship and theory building. That is not to say that there were no scholarly studies—there were a few, including doctoral dissertations from around the time of World War I, or that there was no empirical research, because data flowed from university correspondence departments, private schools, and state departments of education. There was, however, no common theoretical framework. Where studies are found, for example, of such dominant figures as Harper or Lighty, they have to be searched for within studies and reports about broader fields, particularly "extension education," "adult education," and "secondary education." A considerable volume of data can be found about correspondence programs either labeled as such or as "independent study" and also about educational television and radio. Nearly all these data were evaluative in nature, aimed at sustaining or improving programs, and there was no basis for transfer of knowledge across technical platforms. Data on study by television would not appear related to development of courses or support of learners in correspondence education, for example. This was partly because there was no generally understood and agreed set of concepts or terminology so that communication among would-be researchers was unlikely if not impossible, nor was there an identified set of foundation studies that could be referred to as accepted authority for the purpose of framing questions for new research.

Beginning a Theory of Distance Education

It was not until the 1970s that a handful of thinkers began to pull together the strands of almost 100 years of practice into an organized body of knowledge. In retrospect there seems, to those who were present at the time, to have been a stirring of confidence and assertiveness with regard to this method that had for so long suffered an inferiority complex in the presence of the commonly accepted classroom types of education. What appears to have been a significant turning point in this regard occurred at the 1972 World Conference of the International Council for Correspondence Education (ICCE), held in Warrenton, Virginia, under the presidency of Charles Wedemeyer. In his presentation, Michael Moore reported on a 2-year program of meta-research undertaken in association with Wedemeyer, based on the following rationale:

> As we continue to develop various nontraditional methods of reaching the growing numbers of people who cannot or will not attend conventional institutions but who choose to learn apart from their teachers, we should divert some of our resources to the macro-factors, i.e., describing and defining the field... discriminating between the various components of this field; identifying the critical elements of the various forms of learning and teaching, in short, building a theoretical framework which will embrace this whole area of education. (Moore 1973, p. 661)

In reviewing a large population of empirical research conducted over many decades, Moore asserted that "the universe of instruction consisted of two families of teaching behaviors, which we referred to as 'contiguous teaching' and 'distance teaching' and ...defined distance teaching as 'the family of instructional methods in which the teaching behaviors are executed apart from the learning behaviors, ... so that communication between the learner and the teacher must be facilitated by print, electronic, mechanical, or other devices" (Moore 1972, p. 76). He then went on to lay out the broad dimensions of a proposed theory of distance education, based on concepts of curriculum that he referred to as "structure," instruction, or "dialogue" and learning theory, "learner autonomy." This later became known as the Theory of Transactional Distance (see Boyd and Apps 1980).

The term "distance education" originated in Germany and came to Moore's attention from interaction with the German-speaking Swedish educator, Borje Holmberg. Holmberg, at that time director of a private correspondence school in Sweden, was familiar with the work of a group of German scholars who were studying the pedagogy of correspondence study, which they called "fernstudium" or "distance study." One of the leaders of that German research was Otto Peters. As early as 1965, Peters published "Der fernunterriccht. Materialien zur diskussion einer neuen unterrichtsform" ("Distance Education. Sources for the Discussion of a New Form of Teaching"). Unfortunately, this and other articles were not available in English until the 1980s. There was, however, some cross-fertilization of ideas about new ways of organizing educational resources, what Peters called "industrialization," between the Germans and Wedemeyer, partly through Holmberg but also through other English-speaking German educators located at the University of Tübingen, with whom Wedemeyer was in contact. Peters developed ideas that have influenced distance education ever since, through association with scholars in the Soviet Union and the German Democratic Republic (GDR). One notable author in the GDR was Horst Mohle who published "Das Fernstudium an Universitaten, Hoch- und Gachschulen in der DDR" in 1965 in the journal ***Epistolodidaktica***. Students of the history of distance education are urged to study the work of Peters, Mohle, and other German authors in that journal.

The origin of the idea of learner autonomy as a major dimension in a theory of distance education can be traced to Wedemeyer's (1971) attempt to define what he called independent study. From his position as Director of Correspondence Education at the University of Wisconsin in Madison, Wedemeyer had led the discussions among U.S. university correspondence educators that resulted in the National University Extension Association's Correspondence Study Division changing its name to the Independent Study Division. The change of name reflected his idea that correspondence students were not only independent in where and when they studied, but also had considerable independence in controlling *how* they studied.

It was this second aspect of student independence, with its suggestion that separation from the instructor could actually be beneficial for the growth of the learner, that Moore found appealing as a particularly significant idea in mapping out a theory of distance education. The idea that learners had the capacity to exercise what he called "autonomy" was very congruent with his observations during many years of adult education work at the community level in newly independent countries in East Africa, and it was reinforced by discussions with adult education professor (and one-time president of the Adult Education Association) Howard McCluskey, as well as study of other humanistic psychologists, particularly Carl Rogers and Abraham Maslow. The significance of the idea of the autonomous learner was also supported by the work of adult educators Malcolm Knowles and Cyril Houle, and by Houle's student, Alan Tough, whose research was showing the remarkable extent of self-directed learning that went on in informal adult education groups. Moore's analysis of programs where learners were *not* in groups indicated that this was a critically significant factor, a "macro-factor" that could be used to discriminate among such programs. (However, it was never intended to suggest that *all* learners are autonomous, or that *all* programs allow autonomy, but that there is a *range* of degrees of autonomy and that programs can be differentiated by this key variable.)

The terms "dialogue" and "structure" originated in discussions with Robert Boyd, professor of adult education at University of Wisconsin. Boyd's research focused on the dynamics of small adult learning groups, and he developed elaborate models to explain the structures of such groups and the interactions among their members. The term "dialogue" was chosen deliberately in preference to "interaction" in recognition of Boyd's view that the latter term included relationships that were manipulative and often negative whereas the former empha-

sized the extent to which verbal exchanges among members of a group moved in a constructive and positive direction. (The theory does *not* say that all programs and all interactions between teachers and learners or among learners *are* positive, but only that programs can be analyzed and located in relation to others according to the *degree or extent* of their dialogue.)

In 1980, at Boyd's invitation, the Adult Education Association's ***Handbook of Adult Education*** (Boyd and Apps 1980) included a chapter by Moore on distance education. The book was organized around the editors' model of adult education that featured what they called "transactional modes." It was this assignment that led to the coining of the term "Transactional Distance," which has been applied to the theory subsequently.

The German concept of distance education introduced by Moore in Warrenton in 1972 has entered into the general vocabulary of education, and there has been a great deal of research conducted subsequently on each of the three domains outlined in the theory. However, most of the data collected, analyzed, and reported in the large number of studies undertaken in recent years are still weak in their theoretical grounding. With regard to transactional distance, probably the most sophisticated work is that of Farhad Saba. Using computer simulation methods, Saba and Twitchell (1988) and Saba and Shearer (1994) developed a model based on principles of systems dynamics that operationalized dialogue, structure, and autonomy and measured the effects that changes in any of these had in the others. The results of these studies confirmed the hypothesis that transactional distance varies according to the rate of dialogue and structure of the course. The level of transactional distance was shown to decrease as the level of learner autonomy increased and the rate of dialogue increased, thus demonstrating quite effectively the previously hypothesized relationship between the three sets of variables.

One other concept of the 1970s has entered into the general vocabulary: Otto Peters' idea of distance education as an industrial form of education. Whereas transactional distance is a pedagogical theory, explaining distance in terms of teaching and learning variables, Peters' (1983) theory is an organizational theory. It has been valuable in helping explain the application of technology, division of labor, specialization, market segmentation, resource rationalization, standardization, planning, and mass production to the organization of education, and especially in showing the basis for the success of the AIM project, the UK OU, and other distance education institutions. Peters explains—as Wedemeyer demonstrated in his experiments—the quality and cost-effectiveness advantages of breaking the teaching function into smaller component processes and employing specialists to perform each of them. First, content experts contribute what they know best, the content itself; matters of instruction, layout, and technological issues are dealt with by the professionals in those areas. Finally, tutors, who are not necessarily the authors of courses, can carry out the correction of assignments and exams using standardized procedures. By the same token, learner support can be provided by specialists in the learning process and in the technologies employed in order to help students be successful in their distance learning experience. From an economic perspective, the production of distance study courses represents *mass production*. Since the distance teaching institution aims at high enrollments, *planning* and *organization* become crucial factors for their success. The logistics involved in designing, piloting, developing, and delivering courses to thousands of learners at many locations; coordinating the use of synchronous and asynchronous technologies sometimes in the same course; receiving, marking, and returning assignments; coordinating distance delivery with residential weeks or weekend seminars are all elaborate tasks that require sophisticated preparation and management. Specifically regarding the use of technologies, distance teaching institutions must plan how to balance their use and the potential use of face-to-face session so that one medium complements the

other, or a classroom session serves clear purposes and does not merely repeat content or "enrich" the course (Peters 1983).

In regard to his industrial analogy for universities, Peters warned:

> It must be disadvantageous to a society if the developments outlined here have not been, or have not been fully, recognized, or are even denied. Such deep structural changes in academic teaching merit everyone's attention, no matter what hopes of fears are connected with the. If society's awareness lags behind the speedily developing technological and industrial opportunities, this is bound to lead to painful malfunctions, even in the area of academic teaching. (ibid., p. 111)

History of Scholarship

In his seminal 1926 work, ***Correspondence Schools, Lyceums, Chautauquas***, J.S. Noffsinger, first director of the National Home Study Council, complained how "little research...even little thought" had been given to the problems and issues that existed in the correspondence field (p. 90). Little had changed by the 1960s when the leading advocate for scholarship in correspondence education in the NUEA, University of Nebraska professor Gayle Childs, said he was appalled because so little research existed to support the correspondence method. There had been a handful of doctoral dissertations in the intervening years, as well as occasional studies like the NUEA's 1956 survey, which involved 34 institutions and 69,519 enrollees, the "first major correspondence study project to be conducted by NUEA institutions" according to Childs. In addition to completion rates it included a study of the relationship between time to complete and grades earned and also determined which subjects showed high and which showed low completion rates (Almeda 1988, cited in Wright 1991, p. 43). Childs himself received a $365,000 Ford Foundation grant for a study of the effectiveness of television in support of correspondence study conducted at the University of Nebraska (ibid.).

During the 1960s there were studies concerned with marketing, needs assessment, why adults enroll or do not enroll, and evaluation to include quality control and revision of courses, based on reports of the University of Mid-America (Aversa and Forman 1983, cited in Zigerell 1984). They were primarily anecdotal reports of single programs or courses. Efforts to evaluate telecourses were the exception rather than the rule (Munski 1980, cited in Zigerell 1984).

A significant step forward occurred when the leaders of the National Home Study Council and the Correspondence Study Division of the NUEA combined to obtain funding for the Correspondence Education Research Project aimed at identifying the status of correspondence within the broader context of higher education in the United States. The book that reported the research, ***Correspondence Instruction in the U.S.*** by MacKenzie, Christensen, and Rigby (1968) became one of the standard academic works in the field of correspondence instruction. This history and survey filled a void in what little reference material was available at the time and, coming from a group of recognized academics, it made a significant contribution to having the method more seriously considered. The authors declared there was no inherent weakness in the correspondence instruction method. Their report recommended that universities with established traditions in correspondence study should design programs of study to prepare practitioners in instruction and design. Correspondence instruction should be used in conjunction with other methods. The researchers found that educators and opinion makers agreed that the best uses of correspondence study were for adult continuing education, retraining, and vocational study.

During the 1970s seminal ideas emerged. The number of scholars was still very small and also was an international group. Led by Wedemeyer in his role of president of ICCE, it included ICCE vice president, Borje Holmberg in Sweden and his British research assistant, Michael G. Moore.

In 1977 Holmberg prepared a bibliography of existing studies on distance education, categorizing them by "the psychology of learning, language and intelligibility, media characteristics, visualization, typography, etc." Moore published his transactional distance theory in 1972, though by the end of the 1970s most research was still institutional evaluation research, descriptive and unconnected to theory.

Into the 1980s, however, occasional voices continued to lament the lack of a clearly defined paradigm for research (Morgan 1984). Coldeway (1982, cited in Coldeway 1988) performed a literature review and found little "planned-for" research, that is, research conducted in a reportedly systematic, empirical manner. He concluded that it was impossible to analyze data in current research for important effects, the magnitude of effects, and the generality of results because of the less-than-rigorous methods. Most popular subjects for research during the 1980s were all aspects of applying multimedia within distance education systems and comparisons of the effectiveness of correspondence education with other methods of adult and continuing education. (For examples, see Valore and Diehl 1987, pp. 5-8.) Internationally, especially at the Open University, a wider range of topics were being studied, though still within the frame of institutional quality control rather than basic, theoretically driven, research. Topics included student characteristics, high attrition rates, the underrepresentation of disadvantaged segments of society, extent of interest in traditional academic credentialing, the media and their instructional effectiveness, and what teaching functions can best be performed by particular media (Zigerell 1984).

A unique event in the late 1980s set the stage for U.S. research activity of the 1990s: the First American Symposium on Research in Distance Education. This was the first time U.S. leaders in distance education had met specifically to review and discuss the condition of distance education research. Most of the 50 persons attending the invitational meeting were identified as being to a greater or lesser extent already recognized as having an interest in research and scholarship, itself a significant statement about the maturing of the field. The declared purpose of the meeting was to review what research had been done, to identify themes and directions for future research, and to establish the basis for collaboration in that further research. From the symposium came a book of chapters authored by participants, the first scholarly collection of American research on distance education (Moore 1988).

A similar key event opened the 1990s when a workshop was held in Caracas, Venezuela (like the U.S. symposium, under the auspices of the American Center for the Study of Distance Education), this time for international scholars and researchers for the purpose of formulating a proposed global research agenda. Participants suggested these research agendas: action research to include studying computer conferencing; meta-analyses of the values and assumptions of distance education researchers; comparative studies of distance education institutions; students' life experiences; the methods and technologies of the small island countries; the representation of women in distance education materials; the personal, institutional, instructional, and contextual factors that influence student performance; and increased use of the naturalistic paradigm and qualitative research methods (Paulsen and Pinder 1990).

Pushing the boundaries of distance education research methodology, Terry Evans (1990) edited and published a book of qualitative studies. Noting that much of the distance education literature deals with the subject of management only tangentially, if at all, Rumble (1992) provided a list of eight resources, written from 1965-1991 (see pp. 14-15).

Extremely important to this decade is the continuation of effectiveness studies and the further substantiation of the "no significant difference phenomenon." Verduin and Clark (1991) provide a list of these studies—retrieved from the ERIC database and periodical holdings of the Southern Illinois University at Carbondale—all of which compared conventional academic

achievement in higher education with distance education that makes use of correspondence study, television, videodiscs, and computer-based training.

The rigor of the studies varied tremendously. The majority were not very rigorous and throughout the 1990s, the field of distance education continued to demand research with better methodology and theoretical grounding (Coldeway 1996, interviewed by Bunker 1996; Dillon and Walsh 1992; Mizell 1996; Moore and Kearsley 1996; Verduin and Clark 1991). Rigor did increase as the new century approached, but there are still very few experimental studies, a sign some would say of a still immature field of research. Most reported studies are anecdotal or one-shot case studies.

In 1997 Koble and Bunker analyzed 9 years of the characteristics of the discourse in the ***American Journal of Distance Education*** and reported that less than one half of the articles examined were empirical studies. In 2001 Berge and Mrozowski analyzed 1,419 articles in four leading international journals and abstracts and found that only 890 of them contained a solid research method. In the ***American Journal of Distance Education*** several leaders (Saba 1999; Smith and Dillon 1999) debated the merits and demerits of studies that compare alternative delivery methods. Saba argued they do not address the question of the quality of teaching and learning in the right frame and that we should move to apply discourse analysis as a method of data collection as a preliminary step in developing a systems theory of distance education. Pointing out that chaos and not systems theory is the latest in postmodern thinking, Smith and Dillon countered that comparative studies, which they suggested should examine multiple perspectives of media attributes, merely need to be fine tuned, not thrown away.

It appears that Bates had come to a similar conclusion as Smith and Dillon. In a book published in 2000, he contended that straight comparison studies are not helpful, especially since we have known from the 1970s there is "no significant difference." But research into the unique contributions that each technology-medium can make to teaching and learning makes good sense. Extending his conclusion, he said the factors to consider when evaluating the effectiveness of different teaching technologies, all of which are worthy of study, are as follows: access and flexibility, costs, teaching and learning, interactivity and user-friendliness, organizational issues, novelty, and speed.

The Tools of Scholarship

Publications

Among the most noteworthy of the emerging literature of the 1960s are the two volumes of the ***Brandenburg Memorial Essays*** (Wedemeyer 1963, 1966), products of a series of seminars in the early 1960s. In the early 1950s within the NUEA, Neil Garvey of the University of Illinois initiated the first newsletter devoted to correspondence study (NUEA 1952, cited in Wright 1991). In 1971, Wedemeyer initiated the ICCE newsletters. A bibliography appeared in 1960 edited by Childs, followed by those of Holmberg (1968) and Mathieson (1971).

Holmberg (1977) wrote that periodicals such as ***Epistolodidaktika***, first published in 1963, and ***Teaching at a Distance***, first published in 1975, provided for a continuous study of distance education. He also mentioned a number of periodicals that were helpful though they did not specialize in distance education: ***Audiovisual Instruction***, the ***British Journal of Educational Technology***, ***Convergence***, and ***Programmed Learning and Educational Technology***. Betsy Powell, one of the pioneers of 1960s correspondence study, explained that there was no place to publish research during her time, since "education journals and most colleges of education had absolutely no time for correspondence study" (Powell, interviewed by Pittman 1991, p. 70). Zigerell (1984) commented that ***Distance Education***, ***Epistolodidaktica***, and ***Teaching at a Distance*** (which generally included articles on teaching functions, student support systems, and media uses) were not generally held in education collections in the United States.

Wright (1991) emphasizes, "one of the most significant events affecting university independent study in the past 15 years" was the founding of the ***American Journal of Distance Education*** (AJDE) in 1987 (p. 57). Prior to this, all of the scholarly journals devoted to materials of interest to independent study were foreign based, such as ***Distance Education*** (Australia), ***Journal of Distance Education*** and ***Research in Distance Education*** (Canada), and ***Teaching at a Distance*** (the British Open University). In his first editorial in AJDE, editor Michael G. Moore (1987) wrote: "Anything that can be done to minimize the misunderstanding and facilitate communication among distance educators and between distance education and others should be a service to all" (p. 5). A gap would be filled in the American educational literature and in the international literature. Gayle Childs underscored the importance of the event by noting "the increased opportunity such a publication afforded independent study practitioners as an outlet for ideas and information specific to the field of distance education" (Almeda 1988, cited in Wright 1991, p. 57).

In the preface to Watkins and Wright (1991), Wedemeyer notes that every historical period of distance education can be identified with a seminal book of immediate consequences. According to Wedemeyer (1991), one of the two most prominent books in the field is ***University Teaching by Mail*** by Bittner and Mallory (1933), who describe the origins of the field and the integration of correspondence study into American universities. The second was ***New Perspectives in University Correspondence Study*** by Wedemeyer and Childs (1961), which assesses the incorporation of new technologies. This book, published by the Center for the Study of Liberal Education, addressed topics ranging from an overview of correspondence study in the United States to a discussion of the education of individuals via mass media to considerations of characteristics of the self-motivated learner. From the time it was written, ***Correspondence Instruction in the U.S.*** by MacKenzie, Christensen, and Rigby (1968) became another of the standard academic works in the field (Wright 1991).

In 1990 an anthology edited by Moore represented a major step in the establishment of the field by bringing together in one volume for the first time contributions from the majority of persons in the United States who at that time had identified distance education as the focus of their research and scholarship (Pittman 2003, p. xx). In it Pittman wrote an essay that points out the lack of reflective historical treatments of collegiate-level correspondence courses, enumerates extant second works, and points to research gaps.

In 1991 a book sponsored by the Independent Study Division of the National University Continuing Education Association, ***The Foundations of American Distance Education*** by Watkins and Wright, recorded the history, achievements, ideas, issues, and research pertinent to practitioners, faculties, and students in the first 100 years of collegiate distance education from the founding of the University of Chicago's distance education program in 1892.

In 1996 Moore and Kearsley collaborated to create the standard textbook, ***Distance Education: A Systems View***. In 2003 Moore and Anderson produced a ***Handbook of Distance Education*** with chapters by 55 authors as a definitive scholarly reference.

Conferences, Seminars, Symposia, Workshops

The second and fourth International Council of Correspondence Education conferences, which were held in 1948 at the University of Nebraska and in 1953 at the Pennsylvania State University, advanced the status and reputation of correspondence instruction within university higher education (***ICCE Proceedings*** 1949, cited in Wright 1991, p. 41).

As noted previously, the stage was set for the research activity of the 1990s by the First American Symposium on Research in Distance Education, held at the Pennsylvania State University in July 1988 (Moore 1988). It brought together 540 leading thinkers and practitioners from all segments of the field of distance educa-

tion. The symposium was the first attempt to gather and disseminate information about distance education. In the late 1980s the Independent Study Division of the NUCEA renewed its practice of offering workshops with a 4-day program on correspondence education and instructional design held in Dallas, Texas, in March 1988. Two years later, the administrative committee of the ISD voted to establish a standing committee to organize annual workshops (ISD Administrative Committee Minutes 1990, cited in Wright 1991, p. 58).

Teaching and Professional Development Activities for Distance Educators

One of the earliest professional development activities was Wedemeyer's 1960-1961 series of faculty lectures on correspondence education at the University of Wisconsin sponsored by his AIM Project, in which correspondence study leaders were invited to present papers on various aspects of the field. In the early 1970s, Wedemeyer began a regular graduate seminar in "independent study" offered in the adult education program at University of Wisconsin-Madison. In this his research and teaching assistant was Michael G. Moore, who took over teaching that seminar on Wedemeyer's retirement in 1976 and continuing teaching it as a summer special course, most years until 1986. After moving to the Pennsylvania State University in 1986, Moore immediately instituted a graduate program in distance education and developed a three-course sequence that in 2 years attracted more than 50 doctoral, master's, and noncredit students to earn a specially designed certificates in distance education (Moore 1988).

Other early programs of study of distance education emerged in Australia. In 1983 the South Australian College of Advanced Education began teaching courses in distance education leading to a graduate diploma in distance education (King 1989). Available only by distance education, a graduate diploma in distance education was offered by the South Australian College of Advanced Education in 1984 (Willmott and King 1984). In 1987 Holmberg identified several universities where distance education was taught as a separate discipline; he contended "it is evident that a research discipline of distance education has emerged" (p. 20). Using the body of research as a base, Holmberg (1986) in ***Growth and Structures of Distance Education*** described the structures of the discipline as comprised of the following areas: history of distance education, philosophy and theory of distance education, distance education students and instructional subject-matter presentation, communication and interaction between students and their supporting organization, administration and organization, economics, and systems.

By 1992 the Educational Telecommunications Division of the National University Continuing Education Association was able to compile a list of distance education programs of study that identified degrees and certificates in distance education, educational technology, and associated fields of study (Dillon 1992). Among these was the certificate of professional development in distance education from the Department of Continuing and Vocational Education at the University of Wisconsin-Madison, a program built on the foundations laid by Moore and before that, by Wedemeyer (see Gibson 1995). In 1996 Dan Coldeway (interviewed by Bunker 1996) reported that Athabasca University in Canada was offering a master's degree in distance education to students around the world. At the same time, Pennsylvania State University had set up its World Campus where it would shortly offer a master's in adult education online worldwide, again building on the international certificate program taught by teleconference technologies from the mid-1980s. Today there is a considerable number of such programs including the master's degree at the UK Open University and a master's degree offered by the University of Maryland University College in collaboration with the University of Oldenburg in Germany.

Professional Associations for Distance Education

At a 1938 meeting in Vancouver, British Columbia, a group of correspondence educators organized the International Council for Correspondence Education. These early pioneers from the United States and Canada included correspondence educators from public and private schools, colleges/universities, and private academies; adult and continuing educators from a variety of educational settings; and university extension (Evans and Nation 1989; Moore 1989). Primary purposes included disseminating the fruits of research and providing a forum for the development of concepts and theory, holding periodic world conferences, sponsoring the development of regional conferences and groups with a goal of sharing information and providing networking, and providing a vehicle for evaluating programs. ICCE was recognized by UNESCO as the nongovernmental agency representing correspondence-distance educators around the world (ibid.).

As president from 1969-1972, Charles Wedemeyer obtained UNESCO recognition, established a newsletter, generated the first computerized membership list, and initiated a modest research and training project (Moore 1989). About the time Wedemeyer stepped down from the presidency, new educators associated with what one might call the distance education renaissance joined to work alongside of the ICCE pioneers (Evans and Nation 1989). Soon, in fact in 1982 at a conference in Vancouver, ICCE dropped the term correspondence from its name and became the International Council of Distance Education. It elected to include the term distance in its name to show that it incorporates in its purview open universities and multimedia and not only print-based correspondence instruction. In 1988 a permanent secretariat was established in Oslo, Norway, and Reidar Roll was appointed the first Secretary General (Roll interviewed by Moore 1991).

In 1915 the National University Extension Association (NUEA) was formed and held its first meeting at the University of Wisconsin (Pittman 1998; Watkins 1991). In 1924 it formally codified its standards for correspondence study (Pittman 1998). The collegiate and proprietary sectors become rivals. Significantly, the NUEA decided in the early 1950s not to associate with the proprietary schools of correspondence (Pittman 1998; NUEA 1952, cited in Wright 1991, p. 43) through the latter's profession organization, the NHSC. In 1980 NUEA became National University Continuing Education Association (NUCEA). In 1996 NUCEA was renamed again, calling itself the University Continuing Education Association (Pittman 1998).

Within the NUEA, the Correspondence Study Division (CSD) was the first to begin professional development activities and was successful in establishing independent study as a distinct field of practice within university continuing education. The CSD created the first set of criteria of good practice, which applied for 30 years. The division published an Independent Study Catalog, the predecessor to today's Peterson's Guide. Members also performed seminal research on the efficacy of the correspondence format (Powell, interviewed by Pittman 1991). In 1969 the CSD was renamed the Independent Study Division to reflect the new perspective on learner-centered instruction according to Wedemeyer's theories. The ISD retained that name until 1998, when the divisions were abolished (Pittman 1998), reflecting an interest in new technologies rather than in correspondence study.

Among the leaders of the CSD/ISD were Gayle Childs of the University of Nebraska, John L. Davies of Iowa, Betsy Powell of Georgia, Alice Rowbotham of the University of California, and Charles Wedemeyer of the University of Wisconsin. In 1993 the American Association for Collegiate Independent Study (AACIS) emerged as the largest organization of professionals in the field.

In 1926 the Better Business Bureau created the National Home Study Council, which hired Noffsinger as its first director (Clark 1965, cited in Pittman 1998). The standards of the NHSC became very powerful, being established in law. In 1994 the NHSC becomes the Distance Education and Training Council (DETC). DETC continues to exercise influence on the vocational and professional training fields particularly through its Accrediting Commission (see http://www.detc.org/about.html).

The newest of American associations, the U.S. Distance Learning Association (USDLA), was formed in 1986. It earned early recognition from the business and corporate training sector but struggled to achieve similar recognition from academia. One of its leaders, Shirley M. Davis, reported in an interview in 2000 that the USDLA is reshaping itself in an effort to become more proactive in serving the distance learning community, especially that of professional development services (Hardy 2000).

Conclusion:

Has Distance Education Really Changed?

Conclusion

So the question before us is to what extent and in what ways distance education has changed over the period covered in this historical review. My personal opinion is that distance education in the United States has changed a lot in its outward appearance—and has changed much less in its fundamentals. With regard to its appearance, any of our predecessors from a half century ago who returned to visit the field today would find much that was unrecognizable. After a period of adjustment, however, and on closer examination, they would see that it was principally the technology that had changed, whereas the approach to teaching as well as the organizational structures, even the issues and problems would seem quite familiar. I invite readers to consider this by looking in turn at what I have long considered the field's four domains: technology, pedagogy, organization, and policy, and with—overarching these domains—an examination of scholarship.

Technology

Beginning with technology—since distance education requires, by definition, that communication between teacher and learner be mediated by technology, it is understandable that the dramatic technological changes of recent years give the impression the field has changed profoundly since the early days of correspondence instruction, what was referred to as "teaching in text." My own life-span as a distance educator began with teaching in that way when, exactly 40 years ago, I wrote my first study guide for a correspondence course on economics to be offered by the University of East Africa. My first efforts were probably not exemplary, but even then, my trainers (from University of Wisconsin) explained that my responsibility was to structure content so it could be studied in discrete chunks of students' time, organized around weekly learning objectives, and to direct students in preparing their written essays for the instructor's evaluation and for dialogue with each individual learner by correspondence through the mail.

Even in the early 1960s, the limitations of teaching solely by text were recognized, and the compensation of linking what was taught in text to programs delivered by audio and by video—at that time only by broadcast radio and television—was understood. Understood but not always practiced, and already we began to recognize a phenomenon that has bedeviled the field to the present time, which is what I refer to as single-medium fixation. Driven by organizational loyalty to either the "correspondence division" or the radio or television station, most educators involved in design and delivery of distance education programs through the 1970s and early 1980s struggled and squirmed to squeeze their teaching onto one or other of the media channels. Only exceptionally was the most fundamental media selection principle seriously adhered to: that, beginning with the very first design discussion, the guiding question should be *for a given learner population, in its geographic, social, and economic environment, and for each item of content, which is the most cost-effective medium for communicating each item and what is the combination of media that will enable each learning objective to be achieved?* The best quality programs have always been those in which technology has been selectively applied toward the achievement of instructional goals.

Throughout the history of distance education in the United States up to the present time the process has generally been reversed, and instructional decisions have been constrained by policies that required preference for one or other particular technology. Although the dominant technology in the 1970s was broadcast television, in the mid-1980s it became "'teleconferencing"—first audioconferencing by telephone networks, then satellite-borne videoconferencing, followed by textual synchronous "chat" and e-mail on computer networks, leading from the mid-1990s to today's web-based delivery systems. Although each of these technologies was trumpeted in turn by the early adopters as offering the promise of revolutionary change not merely in distance education, but in face-to-face education as well, none of them did. On the contrary, in distance educa-

tion the overwhelming majority of programs were delivered not by electronic technology at all, but by the technology of text and correspondence through the mail.

It is the most recent technology, the computer-carried Internet, World Wide Web, and associated technologies, that gives contemporary distance education the *appearance* of difference from what was available to our forerunners. As a technology for linking learners and instructors it has certain qualities that are as old as distance education itself and certainly other qualities that are somewhat special. Yet I say "somewhat" because I think there is too great a tendency to overstate what is special about the online technology. Unchanged is the basic pedagogical idea of correspondence teaching, i.e., a careful deconstruction of content and reassembly in a series of "lessons" for delivery in text to learners who are challenged in their individual environments to interact with the content to process it into personal knowledge; and that this processing is assisted by an instructor through interaction with each learner in support of that person's independent study. Significantly different from hard-copy correspondence instruction is the potential for the student to interact with other students both synchronously and asynchronously and also the ability to undertake research of sources available on the World Wide Web in lieu of travel to a library of books. Of these two differences the former, usually touted as the pedagogical merit of the Internet, is overstated. Institutions and faculty who believe the Internet to be unique in providing learner-to-learner interaction are those who never discovered or invested in audio and video teleconferencing, which in fact provides more richly dialogic interaction than is achieved by the rather cumbersome means of "chat" in text.

Unquestionably, the improved opportunity for students, especially those in higher education, to undertake investigative quests and research projects as a result of the vast resources available via the Internet has to be recognized as a significant new phenomenon that was not available in distance education programs dependent on previous technologies. Along with the benefits of accessing a wide range of content, however, comes the requirement for educational institutions to design courses that capitalize on this potential, a serious challenge given the ease with which students can become disoriented in the mass of material available. Further the technical challenge (i.e., the bandwidth issue) of delivering satisfactory audio and video on the Web has provided an easy excuse for providers to avoid the considerable financial investments needed to delivery good quality programming in those media. The result is, in the content delivery phase of distance education, a quality of study material that is often no better than traditional correspondence courses and considerably poorer than the best of those courses—those produced nearly 20 years ago by the Annenberg/CPB Project for example, where text was systematically integrated with audio and video programming that displays superior production values. In the interactive phase of distance study that follows the presentation of content, the quality of interaction also often falls short of what was enjoyed in the 1980s era of audio- and videoconferencing.

Of course, the technology that receives most attention is different, changing from print and correspondence through broadcast and recorded audio and video, to teleconferencing and then the Internet. In the instances where these changes in technology have had a real effect on teaching distant learners, what has determined significant change have been variables quite different from the technology itself. Whether the technology has been effective or not has been dependent on the knowledge and skills of teachers who employ them, and to an even greater extent on the readiness of educational organizations to provide the conditions under which their teachers can develop and apply those skills. This brings into sharper focus the question whether the teaching and learning processes in distance education are significantly different.

Pedagogy

As with technology, so with pedagogy the conclusion has to be that although superficially there appear to be differences, for better or for worse the differences are more in appearance than substance. From the perspective of the student, what is it that learners have to do that is different from the past? Learning at a distance is, in the overwhelming majority of cases, still the pursuit of solitary individuals, nearly always adults, usually volunteering to study in their discretionary time and carrying a great deal of responsibility for deciding what, how, when, and where to learn. The pressure on the student in the typical adult environment when faced by the deadline for producing an assignment or the requirement for self-motivation to continue in face of personal and academic adversity would be very familiar to a turn-of-the-century correspondence student for whom the technology of a laptop computer would be absolutely incomprehensible. And for the instructor, what has changed? Each assignment has to be evaluated, comments written, the characteristics of each individual student considered, the institution's standards maintained. In the past, teaching the distant learner was usually considered too humble a role for the most distinguished faculty—some of whom were willing to author a correspondence study guide—and the responsibility for interacting with students most commonly was left to part-time, adjunct professors.

In this regard, some major changes have occurred, with a larger proportion of faculty now interested in extending their teaching by means of computer and Internet. More institutions than in the past include some recognition of this work in their promotion and tenure evaluations. The shift has not been universal by any means, and distance teaching has yet to achieve what distance educators have yearned for over many decades—an elusive parity of esteem with what goes on in the conventional classroom. It is still common for faculty coming to distance education to define their task as emulating the classroom, which they assume to be the ideal learning environment, for their distant learners, as contrasted to recognizing and capitalizing on the special advantages for learning of the distant, individualized, and usually asynchronous environment. This fixation on the classroom as an ideal persists in spite of all the evidence of "no significant difference" between the two methods as well as the many reports by classroom teachers about the beneficial effects on the quality of their classroom teaching that resulted from their learning the different skills of teaching at a distance.

To refer to a previous comment, i.e., the potential of the new technology to carry learner-learner interactions while also providing access to a wide range of library resources, many instructors try to take advantage of these aspects of new technology. The extent to which they are able to do so and the extent to which they can sustain their commitment to both interaction and to constructivist learning methods are functions of their individual commitment, understanding, and teaching skills. It is also a function of the extent to which they have been trained in using technology in these ways. What is certain, however, is that the perspective on the learner is not a new one. Probably few classroom teachers are aware, and few trained distance educators need reminding, that traditionally distance education in the United States was synonymous with "independent study." Over at least 30 years the emphasis on engaging and supporting the learners in the exercise of whatever degree of autonomy they are capable of evolved both as a quite deliberate underpinning of practice and also as a theory of the pedagogy of this field. It is a perspective on the relationship of teacher and learners that is a fresh discovery for many classroom teachers recently coming to teach online. For them, the idea of engaging their students in constructing knowledge within their own physical, cognitive, and emotional "surrounds" (as Wedemeyer liked to call it), is so revolutionary they even invent a new theory of "constructivism" to describe it.

The constructivist approach is certainly made easier and perhaps the potential for improved quality is there, as a result of the learner-to-

learner interactivity that is so easy in Internet-based courses. I definitely capitalize on this in my own online teaching, both because I have long recognized the power brought to almost every adult learning experience when the knowledge of participants is released as a teaching resource but also, frankly, because I recognize that it is impossible to conduct a series of electronically delivered individual tutorials. Having adult learners build on each other's inputs is pedagogically sound and a sensible way of conserving teaching resources. However, for the visitor from any of the better teleconference programs such as the ones I enjoyed in Wisconsin's Educational Telephone Network in the 70s and 80s, even this aspect of contemporary distance education would not appear as unfamiliar as e-learning enthusiasts would like to believe.

Organization

Regardless of how far the classroom teacher has been able to adjust to the communication technologies and the constructivist pedagogies of the new millennium, beyond such challenges and constraints on the individual teacher there is one overarching determinant, beyond the control of any such individual. Ultimately and inevitably, whether the pedagogical potential of any technology is fulfilled depends on management, specifically on how the teaching institution organizes and distributes its human, capital, and financial resources.

Here we encounter the basic explanation why American distance education is fundamentally unchanged from decades past. The explanation is that many American educators and most policymakers are unwilling to confront the challenge presented by the central idea of distance education—that distance education is not primarily a way of using technology, but is first and foremost a different way of organizing ***human*** resources.

Traditionally, education has been a very labor-intensive activity, characterized as a scene in which a small number of attentive students cluster in a classroom on a campus around a sagacious teacher who imparts knowledge by word of mouth, occasionally illustrating points with the aid of a chalkboard. Substitute a PowerPoint or Internet presentation for the chalkboard and the model has remained little changed for the past hundred years. As the numbers of students have risen, so the total costs of the enterprise have risen, since—to maintain the desired ratio of instructor to learner—the number of faculty goes up in direct proportion to the number of students. With some slight variation, numerous research studies show this fixed cost of labor, i.e., faculty, at somewhere in the region of 80% of the total costs of higher education. At my university on the morning of writing this commentary, the student newspaper has reported a rise in tuition fees and quoted a university administrator as saying the rises are inevitable if sufficient and highly qualified faculty are to be recruited and retained. Being highly qualified as masters of their field of knowledge as well as teachers of it is assumed to be essential in academia, no less today than before the availability of communications technology, when the student had no way of accessing knowledge except through the adjacent teacher. The argument that there is no alternative to hiring more and more professors and thus an inexorable rise in the average cost (i.e., tuition) of higher education is simply wrong, and making it reflects the disastrous failure on the part of educational managers to use modern technology and apply modern systems procedures. Lower average costs with sustained or improved quality are achievable—if the institution employs fewer star content experts, develops technologically mediated communications systems, and trains high-quality, but lower-paid, student support specialists.

The establishment of the Open University in Great Britain, a manifestation of Wedemeyer's advocacy of a systems approach integrating technology and teams of specialists in content, instructional design, and learner support, has been emulated in more than 20 nations around

the world over nearly 30 years. These institutions demonstrate beyond doubt that higher education and continuing professional education can be provided more cost effectively through a postindustrial reorganization of resources. And this is not to be taken as suggesting that such reorganization can only be through setting up purpose-built institutions like the Open Universities. On the contrary I have argued (for example, in a recent document from the Association Liaison Office for University Cooperation in Development 2003) that in the 21st century, truly "virtual" organization is preferable, organization that links the resources of numerous agencies into a system comparable to the open university, without incurring its fixed costs. One of my most satisfying experiences of recent years has been involvement in a Brazilian project to train 30,000 rural elementary school teachers, in which the government of that country engaged the best specialists in teacher education nationwide, together with the best designers and producers of print, video, and computer-based technologies to deliver training courses in the workplace (i.e., the schools), with high-quality instructional design and learner support at a fraction of the cost of conventional training and all this with only a handful of full-time employees.

Policy

In the United States by comparison, the design and delivery of distance education programs remains, with few exceptions, locked into an organizational structure that is little changed from that in which correspondence courses were delivered a century ago, which means it is organized to fit in with the organization of the campus, not according to the globally recognized best practice in distance education. Every professor clings to, and plays at being, a distinguished expert in some area of content, with the added but subsidiary roles of instructional designer (perhaps with some assistance), expert facilitator of interaction, evaluator, and learner support specialist for a handful of students. Promotion and tenure requirements in most institutions also demand time and expertise in research and scholarship. Adam Smith's 18th-century discovery of the basic principle of division of labor and economies of scale remains, uniquely among modern service industries, virtually unrecognized. Reform of this quaint preindustrial organization of resources is seldom challenged in the policy forums at national, state, and institutional levels.

In those nations where more efficient distribution of resources has taken place, opposition from entrenched interests has been faced down by political leaders of national stature, i.e., presidents and prime ministers who have provided the political endorsement needed to release the significant sums in up-front investment that precedes the returns-to-scale of subsequent large enrollments. The United States has been notable for lack of success in finding policymakers able to take on this leadership role. As a consequence American education remains technology rich and pedagogically stunted. Distance education points the way to a more efficient way of using resources, but waits for political leadership with vision to fulfill its potential. Lest I appear to be unduly pessimistic here, let me conclude this observation by saying that where I see room for hope is in one of those elements of American society that is among its most characteristic, i.e., the Darwinian competition of the free market. As an increasing number of traditional institutions make efforts to deliver distance education merely as an extension of their classroom teachers by means of the Internet, so an increasing number will discover the limitations of this approach, in terms of both the quality of the program and its economics. In the competition for "market share," the benefits of a systems approach, with division of labor, integration of technologies, and economies of scale, will become apparent. Many institutions will fail, and those that succeed will be those producing better quality programs at lower cost. In time, a de facto specialization of content among leading institutions will lead to better quality for more people at lower cost, over a national "market." The relative success of some for-profit institutions—as well as some publicly funded universities—is

already pointing in this direction. The example of free market forces at work in the television, airline, and health care industries indicates that there is no certainty that market forces will have the effect that good policy and planning might otherwise have. Only time will tell.

Scholarship

One notable part of the distance education field where significant changes have occurred is in the extent and quality of scholarship. As recently as 1985 I found it necessary to argue, as is recorded by the proceedings of the first conference on distance education held at University of Wisconsin-Madison, that there could be no field of study and thus no adequate underpinning of practice in theory or research unless and until distance education in the United States had at least a scholarly journal, a scholarly conference, a program of graduate study, and a national organization. In 1985 we convened the conference in Madison in a room designed for 100 participants, and to our delight had a standing-room only response. In 2003 the 19th annual conference attracted its usual 1,000 plus participants. In 2003 we will also see the 18th volume of the scholarly journal, the ***American Journal of Distance Education***. Since 1986, the journal has shared with the Wisconsin conference each year the presentation of an award for research, given in the name of Charles Wedemeyer. At both Penn State and University of Wisconsin-Madison, graduate courses were established in the mid-1980s. Filling the need for a national organization, the United States Distance Learning Association has served for over a decade to provide a common meetingplace and a communications network to bring together both practitioners and academics.

Finally in this brief summary I would mention the growth of publishing. When I first taught a course in distance education, the only text I could provide my class came from Europe; usually it was one of Holmberg's books, sometimes Keegan, and otherwise Holmberg, Keegan, and Sewart! I turned up each summer at the University of Wisconsin in Madison with a collection of the Open University's journal ***Teaching at a Distance*** for reference by my students. The first American book I could use was ***Contemporary Issues in American Distance Education*** (Moore 1990). In 2003, Moore and Anderson have edited a follow-up to that first book, a ***Handbook of Distance Education***, published by Lawrence Erlbaum Associates. Comparison of the two provides an intriguing perspective on the growth and directions of scholarship in the intervening decades. For example, scholarly leadership can be recognized in the names of authors who appeared both as pioneers in 1986 and as enduring authors in 2003; these include Pittman, Saba, Dillon, Gibson, Feasley, Granger, Davis, Chute, and Dirr. With these distance education scholars, we see others who became established in adjoining fields and have come to distance education relatively recently as the field has become recognized. Some are from communications sciences, instructional systems, policy studies, psychology, and computer sciences. A good proportion of authors in 2003 are a new generation of scholars who have come to attention usually as a result of publication in the scholarly journals and from their conference presentations, and in nearly all cases these publications and presentations have been based on doctoral research. Overall, therefore, the picture with regard to research and scholarship is extremely promising and optimistic, with more and more schools mounting courses in distance education, drawing on the theory and research presented in the ***American Journal of Distance Education***, international distance education journals, and the growing number of textbooks, stimulated by the opportunities offered by the conferences and electronic networks provided by the University of Wisconsin-Madison, Penn State's Distance Education Online Symposium, the USDLA's online resources, with a flow of doctoral dissertations providing a growing body of knowledge as a basis for further research and for teaching. In this lies the most dramatic and most encouraging change in distance education over the past 30 years.

Looking to the Future

Historically, distance education has been regarded as an unimportant and marginal activity by comparison with face-to-face, on-campus forms of teaching and learning. This state of affairs is changing rapidly, the change driven by enthusiasm among educators and trainers in the application of Internet-based information and communications technologies. This new technology has been taken up with equal enthusiasm by open universities, correspondence schools, established "dual-mode" institutions as well as those recently converting to dual-mode status. Traditional providers of postsecondary education—if they look ahead—can see previously unimaginable challenges posed by new "virtual" organizations drawing on globally distributed resources, outsourcing many functions to low-cost third-party suppliers, paying only a minimum of full-time teachers and having no bricks and mortar facilities to drain their resources.

To meet the challenge they also see the possibility of carrying their programs to ever growing numbers of learners using the new information and communications technologies. As the communications devices develop, so the quality and nature of the messages is changing too. Internet technologies make it possible on the one hand for larger numbers of people to share the common learning experience, in real time, or, on the other hand, they enable an individual learner to study independently or to have a unique one-on-one personal interaction with a teacher or with another learner, no matter where located. Whether delivered by text, audio, or video, these messages will increasingly be accessed on a common platform, as bandwidth limitations become less significant than they are at present.

A new, emerging type of virtual distance education organization, although favoring the systematic approach to design and delivery of the open universities, rejects the need for establishing such permanent institutions. Instead the emerging model is that of a network of individuals and services that are linked together to provide the kind of services previously delivered by dedicated institutions, but on a more efficient, more flexible basis through a process of "commissioning."

From the perspective of national policymakers this kind of network system is both more efficient and more flexible than previous organizational forms. Such a system has only a small permanent administration, consisting of specialists in design, technology, and learner support, whose responsibility is to commission, on a contractual basis, the mixture of personnel and other resources needed for each particular project. This permanent, experienced management team is one of two essential requirements for a successful network system; the other is a significant funding resource. The only way the management team can obtain the high-quality resources needed, on a pro-tem basis, guarantee quality, monitor, train, and in every way maximize the human and other resources available is by the power of funding. What this approach promises to bring about is a very flexible, versatile, responsive system, producing high quality without commitment to ongoing institutional costs, and efficiency by employing the comparative advantage of each institution in a country or region. Early innovators—but not to be taken as ideal models—in this approach include the Western Governors University, National Technological University, California Virtual University, and the Automotive Virtual University. One of the most interesting examples, in which a government-driven initiative seeks to engage national resources to meet needs for training of the work force on a national scale is the British University for Industry.

Looking at this evolution from the learner's rather than the provider's perspective, we see that this emerging model is also an evolution of the independent study model. In an Independent study system the principal determination of what is learned and how it is learned lies with the "consumer"—the learner, rather than the "supplier"—the educational institution. Distance education organizations will, in the future make instructors anywhere available to students

anywhere and make courses prepared by any institution available to students anywhere. A student's faculty will no longer be limited to those who assemble in any one place any more than a teacher's students have to assemble in one place. No student needs to take instruction from exactly the same teacher as any other; students can have access to teachers from any state or country at any time and in any combination. Of course "consuming" implies being informed, which indicates a key role for advisory and learner support services in such a "demand-driven" system, and so students will have universal access to the best sources of advice and guidance.

Policy Issues

Up to this point, historically, the changes in distance education arising from new technologies have been rather insignificant. When the new models become established and offer significant alternatives to what exists now, getting right policies for distance education will be far more important than was the case when distance education existed on the margins of educational society.

Some of the policy issues that have to be addressed as we move into this new era include the following:

- The need to plan and create more sophisticated systems for design and delivery of distance education at all levels, institutional, state, and national. The biggest impediment to the effective use of new technology is the failure of institutions, states, and federal authorities to face up to the need to reorganize the distribution of financial and human resources that is essential before the technology itself can be properly deployed. It is quite ridiculous to see the fragmentation of state resources and the multiplicity of inefficient low-quality programs that are inevitable whereas labor, i.e., teaching, is organized on preindustrial lines. Leadership by policymakers and educational administrators is required to face the challenge of redefining and reconstructing their institutions to accommodate the changes needed to deliver new pedagogies to the new types of students in hitherto unfamiliar learning environments. This requires better understanding on the part of policymakers at federal and state levels of alternative state and national development strategies, i.e., other than the current laissez-faire "free-market" dogma.

- The need for new teacher training that leads to changes in teaching culture. The failure to provide proper theoretical and practical training to classroom-trained teachers and administrators is a profoundly significant impediment to the development of distance education. It leads to continued, "inside the box" thinking about policy and delivery. A widened program of "training the trainers" has to be a high priority. That program MUST NOT be primarily focused on how to add new technology to existing pedagogy, but MUST focus on new organizational structures and new roles of the teacher.

- The need to relax institutional barriers to wider student access. The fact has to be faced that just as institutional self-interest does not in itself lead to the optimum use of educational resources at the macro-level, neither does it lead to the most open access from the point of view of the individual student. Policies are needed to reduce institutions' monopolies and their use of restrictive practices on the flow of labor (teaching). These barriers designed to protect institutional monopoly include residence requirements, discriminatory tuition fees, and credit transfer restrictions that impede movement of students among sources of teaching. Above all, they include relaxing the restrictions that prevent faculty providing service to "competing" institutions, enforced under intellectual "property" regulations.

- The continued need to deal with equity problems. Addressing the technological "digital divide" between high-income, urban and majority groups compared to low-

income households, rural families, and minority groups is only an obvious first step. The study skills and self-management competencies needed to take advantage of electronically delivered distance education have to be inculcated and taught at K-12 and college levels to all sectors of the population. Educators have been quick to attack the problem of the digital divide because it is a simple technical problem that can be solved mainly by throwing money at it. A far bigger challenge is the reform of the curriculum and teaching at preadult stages, particularly under the tough conditions of schools in economically and socially deprived communities.

There are numerous problems arising from the growing influence and involvement of the private sector, the "commoditization" of education. Looked at from a macro-economic perspective there are serious questions of cost-efficiency where free-market forces result in a multiplicity of relatively small "suppliers" of programs. At the same time there is concern about quality as for-profit institutions, seeking to minimize cost and maximize income, threaten to drive out better, but more expensive, programs. This highlights the need for a greatly improved system of quality control and monitoring at state and regional levels. The traditional accrediting agencies have only recently engaged in evaluation of distance education and have a long way to go to improve the sophistication of their understanding of this approach. The involvement of for-profit institutions makes more critical the need for public investment to provide opportunity for communities that are not able to attract for-profit delivery by their ability to pay for service.

These questions, only a few of the major policy issues that have to be considered, are big questions. The changes implied are changes in how society distributes resources for its education and can be made only by a society with a vision of its future. Today our educational and political leaders seem to find it very palatable to buy and introduce every new technology that comes along, but seem incapable of producing a vision and a strategy for the fundamental changes in our institutions without which the technology is almost worthless. And underlying this paralysis is a failure to understand what distance education represents, in turn due to an almost universal lack of understanding of its history. The first step the journey toward reform has to take is a widening and broadening of the segment of the professional and political population that knows more about this history.

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Reaction Paper 1
The Best Place to Start: Moore and "From Chautauqua to the Virtual University"

by

Von Pittman

If a person were to listen only to enthusiasts, he or she might easily conclude that distance education arrived, fully developed, on the American campus during the 1990s. Although distance education has a rich and interesting past, promoters of instructional technology and historians of higher education have generally ignored it. In "From Chautauqua to the Virtual University," Michael Moore reminds us of distance education's past, and of its relevance to contemporary practice.

Editors of anthologies sometimes use quick historical overviews of distance education's past as a means of providing context to chapters on modern practice. As Robert Bell and Malcolm Tight (1993) have pointed out, they all seem to rely on the same string of loosely related events. This is because most of them are derivative rehashes of an earlier work. Walton Bittner and Hervey Mallory, two early university correspondence department directors, published the first serious work on collegiate correspondence study, ***University Teaching by Mail***, in 1933. They included a chapter on correspondence study's origins. To my mind, this chapter—though extremely dated—has provided the best and most literate historical overview of distance's education's past, until now. Thankfully, it has finally been superceded. Moore's essay, written 70 years after Bittner and Mallory's book, provides a brief, useful, and up-to-date overview of the evolution of university-level distance education.

Moore's essay serves another important purpose. It is unlikely, even unimaginable, that historians of American higher education will continue to ignore distance education's impact upon the American university, especially its land-grant and state flagship universities. Moore's piece provides a starting point, and a nudge, for researchers who wish to begin quickly acquainting themselves with distance education's past in order to make their own works more credible. Although Moore of course cannot provide extensive information in an essay-length piece, he does point readers in the directions of both more specialized and more comprehensive resources. His bibliography cites secondary sources in which they can find more detailed accounts of the institutions, media, and research studies that interest them.

Extant secondary sources that address distance education's history are heavily weighted toward correspondence study, primarily because most are quite dated. When they were written, correspondence courses represented the dominant mode of distance teaching, the only one in wide use. Thus even the alternate distance education formats that did exist have received slight mention. It seems a shame that such experiments as radio courses broadcast between the World Wars and television courses beamed from airplanes flying figure eights over the Midwest have not piqued greater scholarly interest. Fortunately, Moore gives them exposure and points readers to sources where more information can be found.

The most important observation with which Moore provides us is that distance education's history should not be regarded strictly as a technology-driven narrative. The deployment of resources and the consequent changes in pedagogy are more important than the technological means employed to deliver them, he believes. That is to say, the story of distance education cannot—or at least should not—be recounted simply as a succession of increasingly sophisticated delivery systems. Although technological changes provide a useful means of organizing a narrative, he says, such an approach, by itself, is insufficient.

In developing his narrative, Moore pays particular attention to the structures and purposes of the colleges and universities that offer education at a distance. In the United States, conventional postsecondary institutions have found it difficult, or even undesirable, to integrate distance education into their structure and operations. American universities tend to idealize their three-part mission of teaching, research, and service. Anyone familiar with American universities is aware that service, without exception, is easily the least of those parts in terms of priority, status, and resources. Until very recently, most schools have consigned teaching students at a distance to

the service sector, rather than to the instructional part of their missions. It would not be too much of an exaggeration to say that on many American university campuses, the people directing distance education programs have found it necessary to conduct them almost as subversive activities. They have been allowed to do so only because their programs have sustained themselves financially.

Most of the world's other large nations have taken a different direction due, Moore tells us, to the rigidity of their established universities, which have proven reluctant to consider extending access beyond their gates. Therefore, national governments—in particular, Britain's Labour government—have turned to the idea of dedicated distance education universities. Moore attributes ideals and vision drawn from the larger field of adult education to the founders of the British Open University, the prototypical distance education institution. These ideals included attention to society's need for vocational and professional education, a commitment to equity in access to higher education and its benefits, and a desire to facilitate social change.

Actually, the same three factors, along with the intransigence of Britain's ancient universities, had driven the establishment of the University of London's external degree program a century before the founding of the OU. The "Royal Road," as this program became known, allowed people throughout the Empire to earn degrees through self-directed and self-paced reading regimens, followed by proctored examinations. Curiously, Moore does not mention the London external program, perhaps because it lacked an integral instructional component. However, the Royal Road did establish the idea of "open learning." Although it was not known by that name in the 19th century, it would become central to the ideology of the UK OU. Moore is probably too polite to say so, but it could be argued that the London external degree and the OU indicate that Great Britain historically may have demonstrated a greater commitment to equity, access, and democracy in higher education than has the United States.

Although few people who work as administrators or instructors will have a direct interest in conducting research in the history of distance education, Moore's essay will prove a worthy resource for those who do. It will also serve historians of adult education and higher education. Because of the need for brevity, Moore could not describe the various delivery systems in detail, but he does name every one of any importance. He provides some treatment of the various modes of distance delivery, many of which are rarely mentioned in the scarce literature on the subject. For example, many of the best American engineering colleges began to deliver master's degree courses via videotape almost as soon as the videocassette recorder was invented. Later, they were early adopters of satellite delivery. Thousands of engineers received advanced degrees through these media, yet because these delivery systems have traditionally not been linked with continuing education programs, they have often been overlooked.

Beyond delivery systems, Moore reminds us of the organizational issues that have been central to the history of distance education. For example, the college programs' early relationships and rivalries with the proprietary and military sectors have largely been forgotten. The current prominence of the University of Phoenix and the creation of eArmyU have made them relevant again.

For those few people who are, or will be, interested in more intensive research on the history of distance education, Moore provides an inviting list of research opportunities. The history of distance education is a small field, but it remains largely unplowed. The University of Mid-America's spectacular failure, the advent of the computer in distance education through the military's PLATO project, the exposure of world-class teachers like Jacob Bronowski to millions of students and other viewers through broadcast telecourses, and the decades-long controversy over the "no significant difference" phenomenon provide but a few examples.

From the historian's perspective, Moore has written the most useful short narrative of—and perspective on—collegiate distance education's past now available. Like any good overview, it raises more questions than it answers. But Moore never misleads, editorializes, or resorts to special pleading. For those scholars, practitioners, and casual readers who want truly to understand the effects of distance education on the modern university, "From Chautauqua to the Virtual University" provides an excellent starting point.

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Reaction Paper 2
Critically Examining
Distance Education Practice

by

Terry Anderson

Reaction Paper 2

Michael Moore has made a considerable contribution to scholarship of distance education (DE) by compiling this historical summary of American distance education. I am confident that both DE scholars and practitioners will find the work of significant value, and I commend both the author and ERIC/ACVE for its production. Given the significant amount of very valuable information contained in the document, my comments are nevertheless critical in nature. They speak to a concern that I believe distance educators share with many other now aging educational innovators—an inability to critically examine one's own practice and thereby to ensure that it not only celebrates what has been accomplished, but also that the practice and scholarly discipline are continuously evolving to meet the challenges and opportunities of new eras.

My concerns converge on the pedagogy of distance education and specifically on the relationship between pedagogy and technology. These concerns are focused in three areas: a concern with the assumed equivalence of distance education with independent study, a concern following from the first that mistakenly attempts to align principles of adult learning with independent study pedagogies, and a failure to appreciate the tremendous changes that are currently engulfing distance education practice as result of the emerging networked learning context.

Moore quite correctly notes that distance education is predominantly an adult education endeavor. Despite the recent explosion of interest in virtual high schools in provinces like my own, it is fair to say that distance education students have always been predominantly adult, working or employed in the home, and studying part time. Moore argues that "under these circumstances, distance education is exquisitely suited to meet the needs of the adult in search of learning, as it delivers the means of organized formal study within the work or home environment" (p. 3). It is true that busy adults highly value the time- and place-shifting capacity afforded by distance education. However, there are other characteristics of adult learners that have not been so easily addressed by historical forms of distance education. These concerns are not mentioned in the review. Specifically, Knowles (1980) and other adult learning theorists have argued that adults are autonomous and self-directed. Therefore, learning sequences and curricular agendas should be flexible and open to negotiation. In this way they can be altered in response to the unique and often changing needs of self directed adults. Such flexibility has been very challenging for traditional industrial models of distance education to support. Curriculum and content that has taken years to develop, at great expense is not easily laid aside or even altered at the request of a single autonomous learner. In a very serious critique of his own institution, the Open University, Harris (1987) argued that distance education students have been given the freedom to study when and where they choose, but the capacity to choose content and issues that are important to them has been removed—at great cost to educational effectiveness.

McConnell and Hammond (1996) go on to describe four other problems with conventional distance education. They contend that—

- Knowledge, in packaged form, is slow to be changed and "updated."
- The form of learning encouraged and awarded is inherently individualistic.
- Assessment is unilateral, by the tutor.

Distance learning largely supports a form of positivism in relation to knowledge: it is objectified, packaged, and understood as stable and the same for everyone who learns it. Such positivism is most incongruent with interpretative and social understandings of knowledge and of learning that are currently prevalent.

It is true that not all would agree that these criticisms are fatal to individualized modes of distance education. It is also quite correct to argue that for some students the capacity of time and place shifting is of such value as to mitigate and diminish negative effects of the delivery format such as those listed here. However, such

criticisms are very real issues that distance educators have struggled dealt with during the past century—yet the review ignores or whitewashes such critical discussion.

The problem arises from a technologically determined, historically contingent assumption that distance education means independent study. When the only technology of distance education delivery was the postal system, the only possible interaction and dependent pedagogy was one that evolved to minimize the constraints of the technology and maximize its affordances. This resulted in techniques such as Holmberg's guided didactic interaction, the use of questions within the text and a celebration of the individual interaction between the lone student and the distance teacher. Many critics of distance education have decried this defensive reaction to technological limitations, and an equal number of distance education theorists have described the advantages of moving beyond this narrow conception of distance education by embracing collaborative technologies such as computer conferencing [see especially Garrison and Shale (1987) and Otto Peters' more recent work (2000, 2002)].

It is true that DE can very effectively support independent study, but I don't agree with Moore that this is a defining feature of distance education. Rather it is just one of the pedagogical techniques that can be employed. Similarly collaborative and cooperative work can also be used for pedagogical gain in a distance education context. Moore suggests that the guiding question for technology choice should be *"for a given learner population, in its geographic, social and economic environment, and for each item of content, which is the most cost-effective medium for communicating each item and what is the combination of media that will enable each learning objective to be achieved?"* (p. 34). This question seems to assume an older view that teaching is solely about communicating content. Nonetheless, if one were to apply the same criteria (most cost and pedagogical effectiveness) for choosing collaborative, individual, paced, or unpaced forms of distance education pedagogy, one might have reason for choosing not only the most appropriate technology but also the most appropriate organization of the distance education experience.

Related to the earlier point is a lack of discussion on the pedagogy of cohort-based distance education. This form of distance education (supported by video- and/or audioconferencing via network or telephone lines) is a major contribution of American distance education. Discussion of the pedagogical importance of humanization and the creation of communities of inquiry at a distance in both synchronous and asynchronous environments could have been included in the review as a major contribution of Americans to distance education theory and practice. Opening the discussion to this type of discourse would allow those instructors and students in dual-mode institutions studying various forms of "blended learning," or studying at remote campuses, while enrolled in full-time study or employment, to be included in the DE family.

A way I have come to understand the evolution of DE pedagogy is to think of its earliest forms as being based upon independent study. Next came collaborative-based learning models; and the emerging third stage is agent-assisted learning, (as in autonomous agents associated with the semantic Web technologies). Like earlier discussions of the generations of distance education, my classification system does not assume that one generation replaces another. Rather the pedagogical affordance of each generation allows more choice and freedom for distance education system designers, teachers, and learners to create learning sequences built upon appropriate combinations of the three types of distance learning.

My final concern with the review is that it fails to acknowledge and to sensitize distance educators to the tremendous changes in both distance education practice and theory that are resulting from the gradual emergence of the Internet. Moore characterizes the impact of the World Wide Web by claiming that "Unchanged is the basic pedagogical idea of correspondence teaching, i.e., a careful deconstruction of content

and reassembly in a series of 'lessons' for delivery in text to learners who are challenged in their individual environments to interact with the content to process it into personal knowledge; and that this processing is assisted by an instructor through interaction with each learner in support of that person's independent study" (p. 35). I have argued that today's prevalent, and relatively simple Web technologies have fundamentally changed the way that students interact with teachers, students, and content.

I realize that such futuristic talk places me in the camp of those technological futurists who have claimed (and as Moore correctly points out, usually failed to deliver) the revolutionary impact of various forms of educational technology. Still I argue that the 'Net is different. First because it integrates and subsumes into its multimedial capabilities all other previous technologies—only at lower cost. It supports text delivery of print material, video- and audioconferencing, and broadcasting in both synchronous and asynchronous modalities. To these capacities it adds processing capacity to support educational games, simulations, virtual worlds, remote-sensing, and a host of new applications hardly out of the computer engineering labs, much less in use in use in distance education institutions.

These technological capabilities have brought us to what Malcolm Gladwell (2000) refers to as a "tipping point"—a point when everyday things reach a critical point where change suddenly begins happening very rapidly. This is currently happening with that form of distance education known as e-learning. Waits and Lewis (2003) reported: "During the 12-month 2000–2001 academic year, 56 percent (2,320) of all 2-year and 4-year Title IV-eligible, degree-granting institutions offered distance education courses..... Twelve percent of all institutions indicated that they planned to start offering distance education courses in the next 3 years." This mainstream adoption is something quite different from the often-marginalized distance education that marked the field during the last hundred years. Rather we are experiencing explosive growth of distance education—often referred to as e-learning not only among individual adults but by students living on campus, by collaborative work groups, by classes of high school students, and by students living next door to large campuses. They are studying in groups, by themselves, using print and video and computer-assisted instruction and chat and a host of other permutations and combinations of interactive and information processing techniques—yet they are all studying via the 'Net. Some are studying as individuals, some as groups, some in paced contexts, and others in unpaced and sometimes even unstructured learning formats. For example, in my own most recent course the students are working in teams to create their own course content, organized as small learning portals and left as tagged, learning objects for the benefit of learners anywhere on the 'Net.

Thus, I come to a quite different conclusion than Moore when discussing the impact of technology and pedagogy on past and especially the future of distance education. Nonetheless, I repeat my opening remarks that looking backwards through an informed historical review is a valuable exercise for both practitioners and scholars. However, doing so and studying current technologies and trends makes me more convinced than ever that in the inimitable words of Yogi Berra, "the future ain't what it used to be."

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Reaction Paper 3
Redesigning Distance Education to Deal with Equity Problems

by

Cheris Kramarae

Reaction Paper 3

In his overview, Michael Moore points out that, although the technology of current distance education (DE) receives the most attention in the headlines, the skills of the teachers, the organization of the programs, and the course materials determine whether any of the new technologies are effective.

Unfortunately, the new research in DE ignores much of what we have learned, during the past several decades, about educational materials, pedagogy, and students—with many researchers acting as if the new technologies make all the older research passé. As a result, educational "equity" is often limited to notions of general *access* to courses and degrees. Supposedly, educational equity issues involving race, nationality, occupation, gender, and disabilities are absent when students are online. Thus, DE is considered by many educators as an especially valuable option for women who care for their children in their home, and for those with disabilities or with other traits that make them "different."

Indeed, distance learning technologies have the potential to extend opportunities to many. However, current notions of equity remain very inequitable if they are only about trying to supply the same methods and materials to as many people as possible. Equity should be about trying to provide educational elements—such as dialogue structures, course materials, and projects—that recognize and respect the knowledge, experiences, goals, and economic resources of learners—many of which might be quite different from those of the teachers. The cultural templates of our educational frameworks, those assumptions and behaviors that have been passed down through generations, need to be analyzed and redesigned for equitable education.

In his overview of DE, Michael Moore focuses on institutional and national histories and on those people creating the theory and scholarship—that is, on interests and behaviors of the planners of DE.

If we flip the focus to students, we find a very different set of participants, history, and educational goals and constraints. Most of the administrators have treated the DE courses and programs as additions to, or substitutions for, traditional educational institutions and programs. However, most of the students have used the courses as their only options for continuing education, because of situations of some physical and financial confinement—including full-time employment (outside the home and in the home—and sometimes both in the same day and night), and active military service.

The majority of DE students in the United States have been adult women. These women students have been considered as individuals, on the sidelines of higher education, rather than a large social group working from particular and historical social constraints and having particular political and ideological struggles and successes in higher education. This situation will remain true as long as women in general have more restrictions on their mobility than adult men, with less "free" time away from family responsibilities, as well as more severe economic restrictions.

Few educators and students will argue against these statements, even if many people will continue to ignore them. So here I will provide some specific illustrations of the problems that few DE administrators have addressed in the past. I will mention just a few examples from studies involving, in particular, women students, although recognizing that there are many related issues involving gender, age, race, assumptions of heterosexuality, and expectations that English is every student's first language—issues that over the years have been largely excluded from discussions of DE development.

Isolation, physical and mental, is seen by many administrators and teachers as a major problem for the DE student. Many teachers indicate that they work hard to encourage group interaction in online courses. Many adult women students, however, say that their main problem is not *enough* time to themselves; they are adults who

have been, and are, involved in many learning situations and are not keen to read long online discussion branches late at night. Although many might, under the right circumstances, enjoy and benefit from participating in the variety of new network services that allow synchronous and asynchronous interaction, many do not find it time efficient or learning effective.

Aggressiveness and harassment continue to be problems in online courses as well as onsite courses, particularly for women teachers and students. Not surprisingly, some of the features that make traditional classrooms frosty for women and for male minorities are translated into harassing online behaviors. Although many teachers like to employ some largely autonomous chatroom experiences for students, it is the discussions that are not moderated by teachers that create some of the largest problems for women, male minorities, and other students who are often treated as "different" and less authoritative because of their sexual orientation, religion, native languages, age, and physical disabilities, as perceived by other students from online names and comments.

Learner- and learning-centered programs, as they are now being discussed and promoted in DE literature and practice, are not necessarily of great assistance to women students. For example, although teachers often extol the virtues of student-directed, small group work, many women with multiple family and employment responsibilities (and thus with very constrained time for study) greatly dislike and resent assignments that require them to work to, and wait on, the performance and schedules of others. Creative student collaboration may be a theoretically wonderful educational practice, but it may be woefully out of synch with the realities of actual students' lives.

Computer software programs are called, by some DE planners, the real new media, the configurations that can enable computers to provide teachers with pedagogical advances. Who designs the programs used by the DE students and who has to conform to them? Of course we know that only a few people design for the many. We also know that only a very few of the few are women. It is not that the men's software is defective. But it is that every software designer has limited experiences, understandings, and priorities. Design always assumes certain abilities and interests and has built-in assumptions about which values and which people are important.

For example, the current basic architecture of the Internet is a linking pattern among pages. It assumes that the user is ready to live with a great deal of uncertainty, is willing to get lost and take time refinding material, and is ready to make many fleeting connections as she goes. These patterns are not only matters of learning and experience, but also of confidence, attitude, and time. What some may see as stimulating challenges, others may see as chaotic and very time consuming. Although the searches one makes on the Internet may seem to be individual choices, they can more usefully be considered as choices others have made. What is needed is not the creation of a wide range of flashy gadgets but a wider examination of the situations and needs of many students.

Chatrooms, now a core element of online courses and an answer to past criticism of DE courses that lacked student interaction, are often entirely text based. Silence and absence are both represented in the same way—by lack of text. This means that some participants who want their presence known continually post messages, leading, many women say, to a lot of inane, off-balance conversations.

Also, students whose native language is not English may have to distort their interests and experiences to participate in online English discussions where the "conversations" have an organization, form, and tradition unlike those they are accustomed to in their homes and communities. For example, Indian people in several Arizona tribes (e.g., Western Apache, Navajo, and Papago) tend to be silent in social situations when the role expectations or the social status of the participants are unclear. Asking them to participate in online conversa-

tions with those they do not know well may be equivalent to asking them to commit gross social acts. Also, Indian students, and others who must translate from a Native language into academic English grammatical forms, may have problems expressing themselves quickly online.

Further, a number of studies indicate that in online conversation, as in classroom dialogue, men continue to monopolize topic control, often ignoring the topics raised by women and often persisting in their own presentations even if the topics they introduce are ignored by others. Most current chatroom programs focus on text. In face-to-face interaction, many women become very skilled at hearing and seeing the subtleties of interaction. A richer online environment could provide everyone with a greater variety of ways to interact and understand computer conversations, increasing interest in course work and colleagues.

Any overview of a large historical system such as DE has to be very selective. However, given the central participation of women as DE students, one might ask for exploration of the following questions:

- Will continued avoidance of gender, race, and age issues in most DE programs and evaluations make for continued difficulties for women students and for less rich and less diversified educational programs for all?

- Who needs to be included in deliberations about DE early in the process? How can this process be made as inclusive and representational as possible? And what is early in the process? At the point of determining software requests? When proposed course materials and methodology are evaluated? When the questions for student evaluations are considered?

- Women are underrepresented in computer- and technology-related fields, as well as in online administration. Under what circumstances do women create places for women in online education? When do they help determine classroom materials, norms for dialogue and argument, and the narratives within which information is presented?

Women and men are not separate species of online learners, of course. However, because of dominant cultural templates, women and men online as in the classroom bring somewhat different experiences, expectations, and ideas to a class. Any accounting of the histories and futures of online education will do well to examine which epistemological structures and software are being promoted and which are being discouraged.

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